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PROGRAM-WIDE SITE SAFETY AND HEALTH PLAN FOR REMEDIAL ACTION ACTIVITIES  
FOR NAVAL FACILITIES ENGINEERING COMMAND SOUTHERN DIVISION BASES NAS  
KEY WEST FL  
10/18/1994  
BECHTEL ENVIRONMENTAL INC

PROGRAM-WIDE  
SITE SAFETY AND HEALTH PLAN  
FOR  
NAVY RAC BASES

Prepared for

DEPARTMENT OF THE NAVY  
SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND

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## ADDENDUMS

<u>Addendum</u>			
<u>No.</u>	<u>Title</u>		<u>Base</u>
1	Radiological Surveys/Remediation		NAS Jacksonville
2	Remediation of PSC 2, 41, 43, and Kemens Test Cell		NAS Jacksonville
3	Remediation of PSCs 1, 3, and 22		MCLB Albany
4	F-18 Crash Site		NAS Cecil Field
5	NEX Service Station		NCSC Athens
6	Remediation of Sites 5, and 17, and 103rd Street		NAS Cecil Field
7	Pensacola Site 2662 W 3380		Pensacola
8	Key West		Key West
9	Parris Island		Parris Island
10	Building 25/SWMUs 6 and 7		NS Mayport
11	SWMU 2 (PBC), 1330 Slipform 0		NS Mayport
12	AVGAS Line		Pensacola
13	Buildings 7174, 607, and 610		Orlando
14	Panama City		Panama City
15	Charleston Naval Shipyard (USTs)		Charleston
16	Charleston Naval Weapons Station (IHWFT and Roundhouse)		Charleston

## 1.0 INTRODUCTION

### 1.1 PURPOSE OF THE SITE SAFETY AND HEALTH PLAN

This Site Safety and Health Plan (SSHP) has been prepared for use by Bechtel Environmental, Inc. (BEI), in support of remedial action activities for the Navy Facilities Engineering Command, Southern Division (Navy RAC) bases. A listing of the bases currently having delivery orders and their site descriptions are in Section 1.4 of this Plan. This SSHP implements the safety and health policies contained in the Program Safety and Health Policy (PSHP) and requirements of the Bechtel Corporate Safety and Health Services Manual Volumes I and II, and the applicable Occupational Safety and Health Administration regulations found in 29 CFR 1910, and 29 CFR 1926. Field revision of this plan will be completed in accordance with Navy RAC Safety and Health Standard Operating Procedures (Navy RAC SOP) 2.1.20-A, "Field Revision of Safety and Health Plans."

This SSHP is designed to protect the health and well being of program personnel, subcontractors, vendors, and visitors. This plan includes requirements for all personnel entering controlled areas or handling potentially contaminated equipment. Use of the term Program employees refers to BEI employees, BEI Teaming partners (team subcontractors) employees, BEI subcontractor employees of any tier, and Navy support personnel.

This plan provides the following functions:

- Identifies the project, scope of work, project locations.
- Identifies the potential hazards and assessment of the hazards.
- Identifies training and medical requirement.
- Identifies personnel protection requirements and safe working procedures.
- Identifies supportive documents that form the complete safety program.
- Establishes the monitoring and site control programs.
- Establishes spill control procedures.
- Establishes an Emergency Response and Notification Plan (ERP).

Refer to the Task-Specific Safety and Health Plan (TSSHP) Addenda (1, 2, 3, etc.) for detailed requirements specific to particular task delivery order activities. This plan does not preclude the incorporation of requirements in the PSHP and SSHP.

## **1.2 HIERARCHY OF SAFETY AND HEALTH PROGRAM DOCUMENTS AND USERS OF THE PLANS**

### **1.2.1 Document Hierarchy**

The hierarchy of documents for Navy RAC Safety and Health Program is defined in Figure 1-1. Regulations and corporate policy and procedures form the basis for the Navy RAC Safety and Health Program. The PSHP defines regulatory and corporate policy mandatory for executing work at all Navy RAC sites. This plan is the driving force for site-specific requirements. As most of this Plan is common to all of the bases, a single SSHP has been prepared. Any unique or unusual requirements will be detailed in the Task-Specific Safety and Health Plan (TSSHP) addenda to this plan. The SSHP also includes, for easy access, Attachments A, B, C, and D defining emergency response; hurricane response; spill control requirements; and site location, history, and description respectively. The TSSHP contains task-specific requirements for assignments. Navy RAC SOPs provides specific implementation guidance on how to conduct the work.

### **1.2.2 Users of Documents**

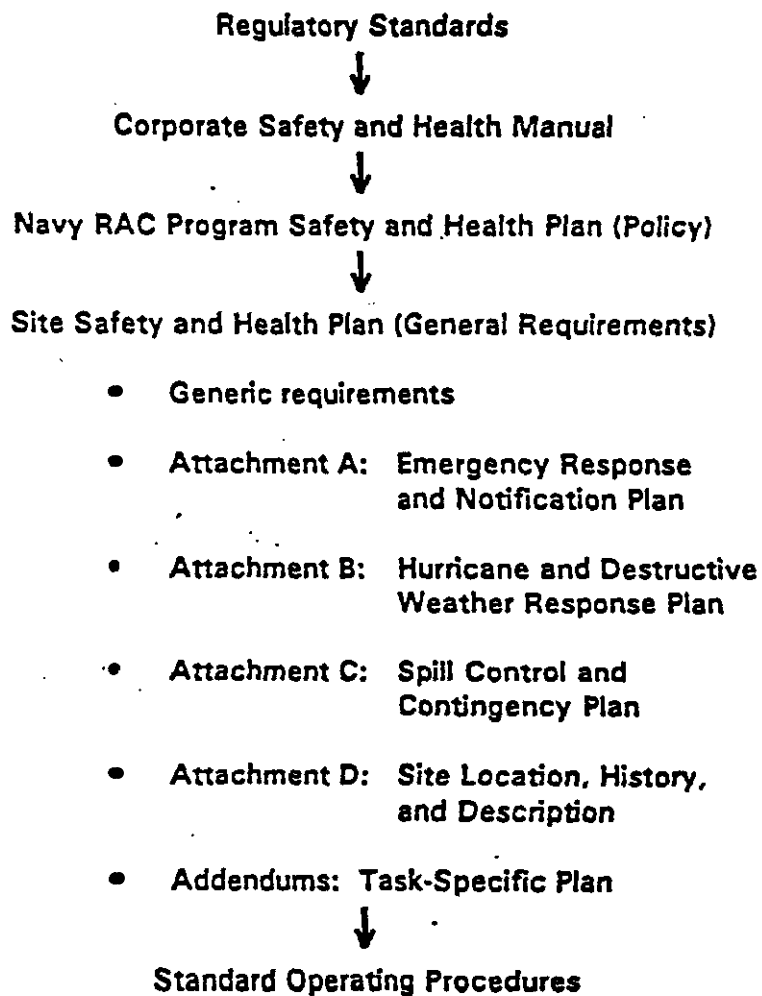
The safety and health documents listed in Figure 1-1 are to be used by the Site Safety and Health Representative (SSHR) for implementation of the onsite safety and health program. The Project Manager (PM) and Project Superintendent (PS) will receive copies and documented training on specific plans and procedures as defined in Table 1-1. This training is to familiarize these individuals with general requirements. The copies will provide easy access reference material. The field task lead, field project engineer and general site workers will receive documented training on safety and health requirements for conducting field activities in a safe manner as described in the plan and procedures. This is typically accomplished through HAZWOPER training and site orientation. The emergency coordinator will be issued and become familiar with the emergency response plan (Attachment A) and its associated SOPs.

## **1.3 REGULATORY AND CORPORATE BASE**

This SSHP has been prepared in order to meet the specific requirements of the Occupational Safety and Health Administration (OSHA), U.S. Army Corps of Engineers (COE), Navy, and BEI that are contained in the following documents:

- Safety and Health Requirements Manual, EM 385-1-1, Rev. 1992 , US Army Corps of Engineers
- Navy/Marine Corps Installation Restoration Manual, Feb. 1992
- OSHA 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response
- BEI requirements as set forth in the Bechtel Corporate Safety and Health Services Manual





**Figure 1-1 Safety and Health Document Hierarchy**

Individual	Regulations	Corporate Manual	Program Safety and Health Policy	Site Safety and Health Plan	Standard Operating Procedure
Project Manager			x +	x +	x +
Project Superintendent		x +	x +	x +	x +
Site Safety and Health Representative	x	x	x	x	x
Field Task Lead				+	+
Field Project Engineer				+	+
General Worker				+	+
Emergency Coordinator			x +	x +	x +

X = Issued a copy of document.  
+ = Receives training on document.

Table 1-1  
Safety and Health Document Matrix

## **1.4 SITE LOCATION, HISTORY, AND DESCRIPTION**

The site location, history, and description of the various sites can be found in Attachment D. Attachment D will be revised as information is obtained for future sites, or this information will be found in the TSSHP.

## **1.5 SCOPE OF WORK**

Work to be performed at the site is described in task-specific remedial action work plans and summarized in the TSSHP Addenda, which are generated based on the specific assigned tasks.

## **1.6 SUPPLEMENTAL DOCUMENTS**

This plan is not complete without the following reference documents available to the reader and onsite during work execution:

- Applicable TSSHP Addendum(s)
- Applicable work plans
- Navy RAC Program Safety and Health Policy
- Navy RAC S&H Standard Operating Procedures

## **1.7 REVISING DOCUMENTS**

The SSHP is a "living document" and will be modified as site conditions change. All original documents will be changed to reflect revisions, if any. Project Document Control Center (PDCC) will control and track these revisions.

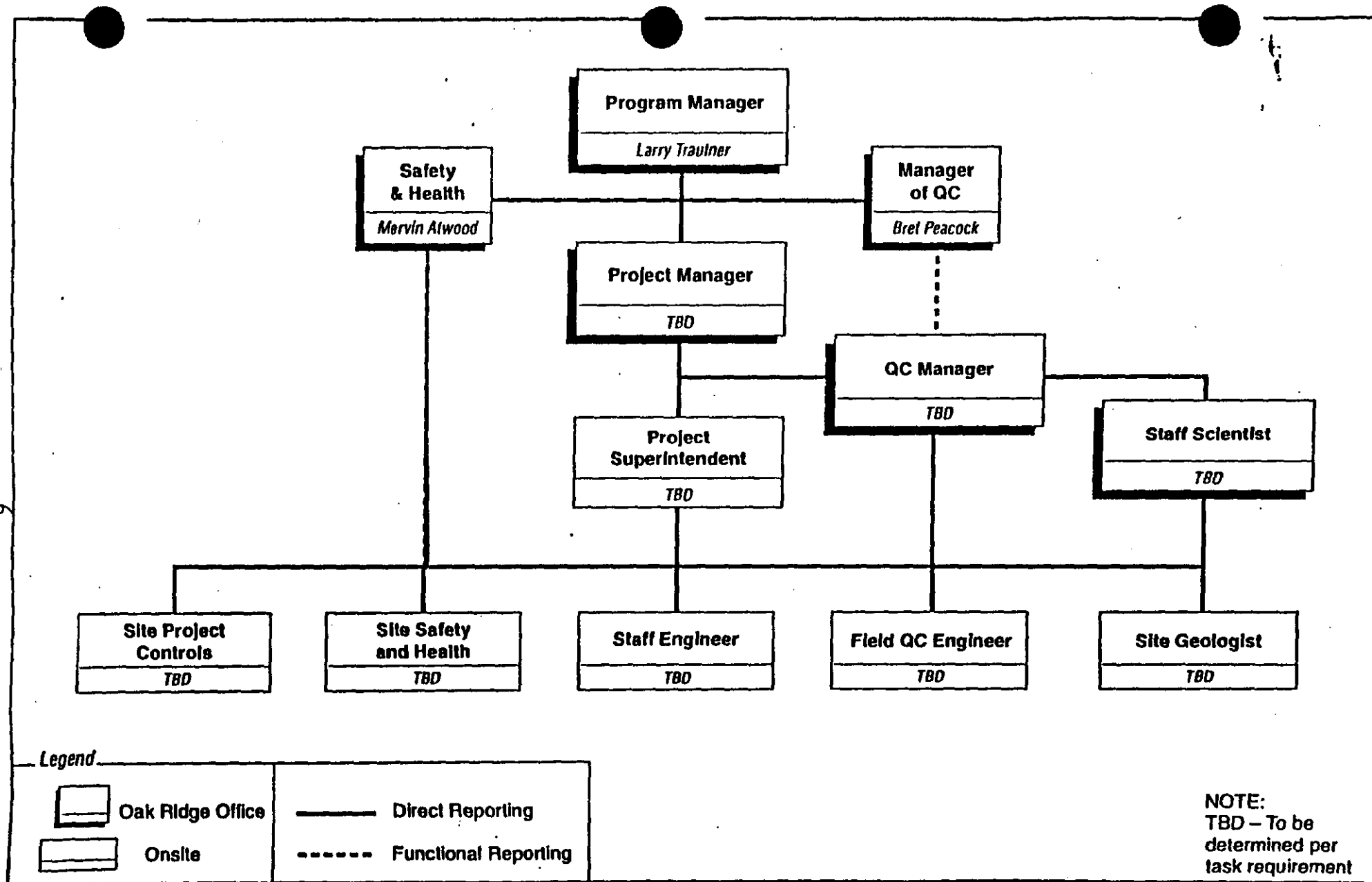
# **2.0 ORGANIZATION AND RESPONSIBILITIES**

## **2.1 GENERAL**

Program safety and health organization and responsibilities of safety and health staff are described in Navy RAC SOP 2.1.1, "Safety and Health Organization and Responsibilities." Responsibilities of other key personnel in the Navy RAC Program with respect to safety and health are described in Section 2.0 of the PSHP. Figure 2-1 defines the organization, responsibilities, and authorities of BEI personnel.

## **2.2 SUBCONTRACTOR REQUIREMENTS**

Subcontractor requirements are identified and described in Section 12.0 of the PSHP.



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**Figure 2-1  
Generic Project Organization**

## **2.3 SITE SAFETY AND HEALTH REPRESENTATIVES**

The SSHR's specific responsibilities are defined in Navy RAC SOP 2.1.1-A, "Site Safety and Health Representative Responsibilities."

## **3.0 HAZARD ANALYSIS**

### **3.1 HAZARD IDENTIFICATION**

The work plan for each work assignment shall be reviewed by the SSHR in accordance with Navy RAC SOP 2.1.16, "Job Hazard Analysis," to identify hazards that are likely to be present during field activities. This review identifies the hazards to be controlled for each activity. Hazards not identified at the time of initial plan preparation, shall require the preparation of a supplemental hazard assessment. A summary of the "Job Hazard Analysis" shall be presented in the TSSHP Addendum.

Hazards that are considered significant because of frequency of occurrence, or because of serious injurious effects shall be discussed in detail in the TSSHP Addendum. Hazards that are considered to be known or routinely experienced at Navy installations during environmental remediation activities are discussed in detail in this section.

### **3.2 HAZARD ASSESSMENT**

The site may include ditches, areas that are poorly drained, rough or uneven terrain, depressed areas (which may present oxygen deficiency or flammable gas-collection areas), protruding objects, and impalement hazards. The SSHR shall assure that a careful pre-work walkover is made of all work areas and potential access or egress routes. Unsafe areas will be flagged or taped by the SSHR and will be identified to all personnel.

In addition to the safety hazards onsite that result from industrial and military operations, and the hazards associated with equipment used to perform the task, a potential health hazard arises from exposure to organic and inorganic chemicals, physical agents, and biological agents (if present) which are unearthed or released during the work.

The chemical or biological exposure incident ranking as a result of project activities at the Navy RAC Base are: first, contact with chemicals during treatment operations; second, contact with contaminated soils and sediments during excavations, sampling, and drilling (if conducted); and third, contact with groundwater.

Incidents not associated with Program activities that may occur at the site include tornadoes, hurricanes, and other violent weather and contact with dangerous wildlife, in addition to fire events, chemical releases, or explosions associated with military operations. Emergency actions as a result of incidents associated with program operations or host facility operations are

described in Attachment A of this plan. Emergency actions as a result of hurricanes are described in Attachment B of this plan.

Based on the characterization reports and the project description, many potential hazards associated with BEI's scope of work have been identified. Each of these classes of hazard is discussed in the sections that follow.

### **3.3 PHYSICAL HAZARDS**

The physical hazards associated with the project include eye injury, cuts, and chemical burns; noise; heavy equipment use injuries; falling, slipping, and tripping; manual lifting, back injuries; cave-in; heat stress; electrical shock; working over water (drowning); fire or explosion, and dropping heavy items. Specific physical hazards are discussed in the following sections.

#### **3.3.1 Noise**

Working near heavy equipment, such as excavators, can subject workers to noise exposures in excess of allowable limits. Other equipment, such as jackhammers, pumps, grinders, and drills are equally hazardous. Nonessential personnel who do not need to be next to loud equipment shall remain away from such sources to lower the risk of noise-induced hearing loss. The SSHR shall perform and document noise level monitoring following the procedure contained in Navy RAC SOP 2.1.21, "Hearing Conservation." Personnel who operate or must work next to noisy equipment shall be required to wear hearing protection (ear plugs or muffs) provided by the SSHR to reduce their exposure to excessive noise.

Protection shall be used by persons who enter areas in excess of 85 dB(A). Workers exposed to noise levels at, or above, 85 dB(A) shall be enrolled in a hearing conservation program as described in Navy RAC SOP 2.1.21, "Hearing Conservation."

#### **3.3.2 Energized and/or Moving Parts**

Contact with energized utilities or moving parts may occur during drilling operations and movement of heavy equipment. Project-wide requirements addressing the hazards of energized utilities are contained in Navy RAC SOP 2.1.17-A, "Utility Clearance."

Equipment with moving parts or gears shall be guarded to prevent accidental contact. In special cases where moving parts or gears cannot be guarded adequately, only experienced operators shall be allowed to work around them. These operators shall not wear loose-fitting clothes or long hair that may catch in the moving parts. Special precautions shall be observed during equipment operation to avoid potential accidents due to equipment failure or breakage. Unauthorized personnel shall not operate or handle equipment.

Subcontractors shall adhere to Navy RAC SOPs in addition to implementing their own safe practice procedures. Only subcontractor personnel who have been verified and documented "as

qualified" shall operate heavy equipment during field activities. Subcontractors shall maintain equipment in good condition, and shall implement effective procedures including documented routine and initial inspections of such equipment.

Prior to any drilling operation or excavation of contaminated soil, the SSHR shall ensure that the Naval Resident Officer in Charge of Construction (ROICC) Navy RAC bases representative is contacted to provide information regarding the location of underground utilities. In addition, local utilities servicing the installation shall be contacted to provide information on the location of their equipment.

### **3.3.3 Vehicle and Heavy Equipment Operation**

Vehicles shall only be operated in authorized areas. While operating equipment, caution shall be exercised so as not to damage the equipment or property, in addition to not causing injury. The SSHR shall ensure that heavy equipment operators have documented training and experience on the equipment. A guide shall be used to direct the vehicle when backing up heavy equipment, or vehicles with obscured rear vision. Heavy equipment such as trucks, dozers, excavators, etc. shall have backup alarms. Extra caution shall be exercised during vehicle operation on project roads, industrial areas, and close spaces. Personnel directing traffic onsite shall wear orange vests. Each vehicle shall be equipped with a minimum of one 3A:40B:40C rated fire extinguisher. Heavy equipment shall undergo required daily safety inspections prior to use. Refer to Navy RAC SOP 2.1.40-A, "Vehicle and Heavy Equipment Safety," safety requirements for operation, vehicle inspection and documentation requirements. Proper distance will be maintained away from energized utilities as specified in Navy RAC SOP 2.1.17-A, "Utility Clearance."

### **3.3.4 Subcontractor Furnished Equipment**

The subcontractor is responsible for proper and safe operation of all equipment they bring to the site. Program employees will not operate subcontractor-furnished equipment unless they have been authorized to do so.

### **3.3.5 Steam and High Pressure Cleaning Equipment**

Eye and face protection shall be used by operators working with steam or high pressure water. Only qualified personnel trained in the safe operation and maintenance of such equipment shall be authorized to use the steam or high pressure cleaner.

### **3.3.6 Falling, Slipping, and Tripping**

Work zone surfaces shall be maintained in a neat and orderly state. The PS and SSHR shall inspect and assure that the work areas are neat and in an orderly state. Foot traffic shall avoid areas where materials are stored on the ground. Tools and materials shall not be left randomly on surfaces when not in direct use. Hoses and cables shall be grouped, routed to minimize

hazards, and covered with a ramp or bridge or clearly marked with hazard tape or flags if such material will remain in place for more than one shift.

### **3.3.7 Manual Lifting Techniques**

During any manual material handling tasks, personnel shall be trained to lift with the force of the load suspended on their legs and not on their backs. An adequate number of personnel or an appropriate mechanical device shall be used to safely lift or handle heavy equipment. When heavy objects must be lifted manually, workers shall keep the load close to the body and shall avoid any twisting or turning motions in order to minimize stress on the lower back. The SSHR can provide lifting orientation and specific back stretching and warm-up exercises to help minimize the potential for back injuries. Use of these exercises by all field personnel at the start of each shift will be encouraged by the SSHR.

### **3.3.8 Cave-in**

Site workers may be injured or killed by cave-ins caused by entry into excavations or trenches. To ensure this work is performed safely, all excavations and trenches shall comply with Navy RAC SOP 2.1.17-C, "Excavations and Trenches." All excavations and/or trenches greater than five (5) feet deep shall be sloped or shored prior to entry of personnel. The only exception to sloping and shoring is if the entry worker is shielded. A professional engineer shall evaluate and approve any shoring or shielding prior to entry.

### **3.3.9 Extreme Cold and Heat Stress**

Heat stress is known to become a significant risk factor while wearing protective clothing and equipment, especially when ambient temperatures and humidity are elevated. Personnel shall be made aware of the symptoms of heat stress so that treatment can be provided immediately. Cold stress should not be a significant factor for work at Navy RAC bases. Heat stress is covered in Section 7.8 of this SSHP.

### **3.3.10 Work Over or Near Water**

Whenever there is a potential for employees to fall into deep water and/or there is a danger of drowning, work will be conducted in accordance with the requirements of applicable OSHA standards and USACE EM 385-1-1. Work within 15 feet of unobstructed access to deep water shall be deemed to be within the requirements of this section. Except where employees are protected by continuous guardrails, safety belts, lanyards, or nets, these requirements shall be met by all personnel.

### **3.3.11 Hurricane and Destructive Weather**

Minimum BEI standards are defined in Attachment B of this Plan.



### **3.4 RADIATION HAZARDS**

#### **3.4.1 Ionizing Radiation**

Criteria for ionizing radiation will be provided in the TSSHPs.

#### **3.4.2 Nonionizing Radiation (RF)**

Nonionizing radiation arises from military communication, radar, and other sensing devices. Particularly intense fields may be experienced around some operational equipment such as antennas, operational aircraft, and vessels. Where the potential for nonionizing radiation fields in the work area are identified, the SSHR and/or Project Safety and Health Manager (SHM) shall consult with the Program Health Physicist to evaluate the hazard to Program personnel.

#### **3.4.3 Solar Radiation**

The SSHR will encourage Program personnel working outdoors to utilize sunblock to minimize the harmful effects of the sun's rays on the skin.

### **3.5 VIBRATION**

Vibration-induced illness, such as carpal tunnel syndrome may occur when operators handle vibrating equipment or tools for long periods of time. Where use of vibrating equipment is identified, the SSHR shall require engineering and/or administrative controls to protect against vibration type injuries.

### **3.6 CONSTRUCTION HAZARDS**

Program activities at field sites may expose personnel to various construction hazards. A summary of the common construction hazards expected and general methods that will be utilized by the Program to assure worker safety are listed in Table 3-1. A task-by-task analysis of construction hazards for work to be conducted at the site during the task shall be provided in the TSSHP.

The SSHR, or designee shall observe all operations, particularly heavy equipment operations, to oversee construction safety hazards, including but not limited to pinch-points (areas on the equipment where limbs or extremities may become caught, mutilated, or dismembered). The SSHR shall review special plans such as, but not limited to, rigging plans and confined space entry plans. He shall inspect equipment including harnesses and rescue equipment.

#### **3.6.1 Equipment Guard**

Engineering controls, administrative procedures (e.g., lockout-tagout procedures), and equipment-guarding techniques shall be implemented to prevent injuries from construction hazards.

**Table 3-1**  
**Construction Hazards at Navy RAC Bases**

<u>Construction Hazards</u>	<u>Methods to Ensure Worker Safety</u>
Excessive noise from operating drill rigs	If noise levels exceed 85 dBA, affected workers must don ear protection.
Injuries caused by tripping or falling	SSHR shall conduct job site walkover to identify hazards. Employees shall be trained in housekeeping, and areas shall be monitored daily by the SSHR and PS. Immovable trip hazards shall be marked or guarded.
Accidents involving power equipment or sharp objects, etc.	Equipment shall have guards or shields, and workers operating equipment shall wear faceshields or safety goggles, as prescribed by the SSHR. Power equipment shall have UL-approved tags. Sharp objects shall be kept out of the work areas unless needed for the task. If possible, sharp corners or edges will be wrapped with high-visibility tape.
Electrical shock	All electrical equipment shall be grounded. All power supplies for portable electrical tools and hand lighting shall be protected by installing portable Ground Fault Circuit Interrupt (GFCI) Protection. Lock-out/tag-out procedures shall be employed before work on electrical equipment begins.
Fires	Fire extinguishers shall be maintained on each vehicle and in suspected fire areas. Workers shall be trained in fire extinguisher use and for notification of fires. Smoking will be permitted only in a designed area at the site. Spark-proof equipment shall be used when flammable environments exceed 10% of the lower explosion limit (LEL).
Explosions	During activities where potential hazards exist, explosive gas meters will be used to monitor the area. Where potential for unexploded ordinances exist, the Navy shall provide a qualified person to assist in identifying and neutralizing the hazard.
Mutilation from heavy equipment, pinch points	SSHR and Operator will inspect all equipment before use. Areas that cannot be guarded that represent a hazard shall be discussed with the workers prior to the start of work.

**Table 3-1 (continued)**

**Construction Hazards**

**Methods to Ensure Worker Safety**

Skin and eye irritation from contact with chemicals

Workers shall not be allowed to work with chemicals without proper personal protective equipment (PPE). The SSHR shall determine the correct PPE needed for the task and shall assure the worker has been trained and is aware of the material safety data sheet (MSDS) provisions.

Stinging insects such as wasps and bees

During the prework walkover of task locations, the SSHR shall identify any areas that could subject workers to stinging insects. The SSHR and PS shall determine the actions needed to rectify the problem. Workers shall not be allowed to work near insects where an unreasonable risk is presented.

Lifting, manual labor

The SSHR shall identify ergonomic factors and shall develop measures to prevent health impairment. Back protection, lifting techniques, and warm-up shall be used prior to strenuous tasks. Special hand protection shall be required where indicated.

Nonionizing radiation

SSHR shall establish safe work areas, monitoring.

Solar radiation

Protective clothing or sunblock shall be used.

Vibration

Limitations on intensity and duration of exposure shall be initiated through rotation, PPE, and engineering controls.

Vermin

Site screening, and PPE shall be used.

Wild animals

Site screening, fencing shall be used.

Poison plants

Site screening, protective clothing, skin creams shall be used. Immunization shots may be appropriate in some cases.

Snakes

Site screening, protective clothing, first-aid and/or snake bite kits shall be used.

Additionally, PPE is to be used when engineering controls alone cannot reduce exposure hazards to acceptable levels.

The overall risks presented by construction activities associated with treatment, cleaning, decontamination, excavation, vehicle operation, and other such equipment are normally greater than those presented by potential exposure to chemicals. Compliance with all safety rules and procedures shall be of paramount importance.

### **3.6.2 Underground Cables**

Underground utilities (i.e., electrical cable, pipelines, etc.), may be present at this site. Before excavating, drilling, or other intrusive activities are performed, the base public works personnel shall be notified and an underground utility check shall be conducted. In addition, where records are inadequate or questionable, a utility search using specialized detection equipment shall be performed. Hand shoveling shall be utilized to locate cables when their presence is suspected, per Navy RAC SOP 2.1.17-A, "Utility Clearance."

### **3.6.3 Electrical Hazards**

Electrical work will be performed during installation of trailer facilities onsite. Use of electrical extension cords should be expected throughout the work. Electrical safety requirements are specified in Navy RAC SOP 2.1.40-C, "Electrical Safety."

The SSHR shall ensure that all electrical installations, connections, or repairs at the site will be made by qualified electricians, in accordance with the most current revisions (in print) of 29 CFR 1926/1910, NFPA 70, the National Electrical Code, and the National Electric Safety Code. All power tools used on the site shall be grounded or have an UL label indicating that the device is double insulated. All outlets, including those on extension cords, shall have GFCI protection.

Overhead cables may be present onsite. Refer to Navy RAC SOP 2.1.40-C, "Electrical Safety," for details. A detailed hazard analysis shall be prepared by the subcontractor in accordance with Navy RAC SOP 2.1.16, "Job Hazard Analysis," prior to operating heavy equipment (drilling rigs, excavators, cranes) underneath or within 20 feet of overhead electrical cables.

### **3.6.4 Oxygen Deficiency**

Oxygen deficiency can occur in confined spaces, open test pits or low-lying areas as a result of displacement of oxygen by another gas (marsh gas, chemical decomposition, or source contamination). The SSHR shall monitor all suspect areas prior to entry into test pits, depressions, or low-lying areas. The TSSHHP Addendum shall specify the frequency of monitoring.

### 3.6.5 Low-Lying Areas

Where large depressed areas must be entered and where a case-by-case site hazard evaluation has determined the potential for toxic or oxygen-displacing gas buildup exist and monitoring cannot be performed prior to entry to the area, the entry team shall carry an oxygen/LEL/hydrogen sulfide detector and a flame or photoionization (FID or PID) gas detector. A backup rescue team equipped with SCBA equipment shall be on standby.

### 3.6.6 Chemical Handling

Chemicals brought into the field by Program personnel or support personnel may be used for activities such as decontaminating surfaces and equipment, killing weeds or pest control, waste treatment, and/or encapsulation. Hazards associated with these chemicals may include the following.

- Oxygen deficiency if used in areas with poor ventilation
- Chemical burns or irritations
- Toxic exposures
- Fires/explosions

The SSHR shall evaluate the need for special chemical handling procedures during the chemical-use review process (i.e., review of MSDSs)

### 3.6.7 Drum Excavation/Sampling

Above ground and buried containers may exist at the work sites. The discovery of unanticipated buried drums shall be considered an unusual event requiring temporary work stoppage and evaluation. These containers may be encountered during excavation, trenching and/or drilling operations.

Potential hazards of handling buried containers of unknown content include the following:

- Fire and/or explosion.
- Exposure of workers or general public to toxic, and/or corrosive chemicals.
- Spillage of materials with risk of migration to uncontrolled areas.

Typically, drums shall be evaluated, stabilized (when necessary), and sampled prior to handling and disposal. Drum handling shall be in accordance with USACE EM 385-1-1 Section 28.H, "Handling Drums and Containers." The TSSHP Addendum shall be amended to include special practices should containers with unknown constituents be discovered.

### **3.6.8 Soil Excavation/Trenching**

Excavation of contaminated soil may present multiple hazards to workers including chemical exposure, fire and explosion hazards, exposure to energized utilities, heavy equipment, and cave-ins.

The SSHR and PS shall provide clearance to excavate at the site.

### **3.6.9 Confined Space Entry**

Confined spaces, including but not limited to trenches, ditches, holes, culverts, structures, and tanks, presents multiple hazards including oxygen deficiency, toxic agent exposure, heat stress, engulfment, and other hazards.

Detailed confined space entry procedures are defined in Navy RAC SOP 2.1.40-C, "Confined Space Entry." Confined space entries will be made in accordance with a specific confined space entry permit approved by the SSHR and PS. A designated "OSHA competent person" for confined space work shall be onsite during all confined space entry activities.

### **3.6.10 Fire and Explosion Hazards**

The potential for high total petroleum hydrocarbon (TPH) concentrations may exist in work areas. Care shall be taken to assure that explosive mixture monitoring is performed in an adequate manner and that ignition sources are controlled or eliminated.

### **3.6.11 Pipelines**

Overhead and buried pipelines containing natural gas and petroleum fuels are common on Navy installations. These pipelines present another source of a potential fire and explosion hazard. All work areas will be cleared by the ROICC prior to soil-intrusive work or movement of heavy equipment into or through utility corridors. Program personnel will obtain clearances from the SSHR and PS to excavate at the site. In addition, when locations of buried lines are uncertain, excavation shall always be performed by hand until the utility is located or the area is cleared. The responsible facility operations public works department or maintenance department shall review the location of emergency shutoff valves with project personnel at the prejob meeting or tool box safety meeting prior to working in an area of concern.

### **3.6.12 High-Pressure Hose**

High pressure hose ends may "whip" if the fitting become disconnected. All hose ends shall be secured and have "whip protectors" attached to minimize whipping, and all connections shall be secured to prevent accidental disconnects.

### **3.6.13 Suspended Loads**

Work is not permitted under suspended loads during lifts. Accessible areas under suspended loads shall be barricaded where feasible.

### **3.6.14 Static Electricity**

Static electricity may occur from pouring liquids. For flammable liquids, grounding and bonding shall be used during fuel transfer and other potential static-producing activities.

### **3.6.15 Unstable or Steep Terrain**

Extreme caution shall be used when moving heavy equipment over steep terrain. The advice of a soils engineer shall be obtained before working or crossing potentially unstable terrain.

### **3.6.16 Work Near Roadways**

Traffic control shall be implemented in accordance with installation requirements or the "Manual of Traffic Controls for Construction and Maintenance Work Zones." Employees performing traffic control shall wear orange garments in the daytime and reflectorized garments after dusk. Work near roadways will be halted during periods of heavy rainfall.

### **3.6.17 Welding and Torch Cutting**

Welding shall not be conducted without an approved hot work permit issued by the SSHR and signed by the PS. Welding shall not be conducted in a contaminated or flammable area without a special procedure approved by the SSHR.

### **3.6.18 Work from Elevated Platforms**

Work from elevations greater than six feet shall require fall-protection devices. Under no circumstances shall the design platform weight be exceeded. Handrails, midrails, and toe boards shall be installed to prevent workers from falling.

## **3.7 CHEMICAL HAZARDS**

This section describes the toxicological (health) hazards associated with exposure to organic and inorganic chemicals that may be encountered. Detailed information on chemicals potentially expected to be present at the site is provided in the TSSHP Addendum.

Specific chemicals commonly encountered on Navy sites are discussed in the following sections. Exposures may occur principally by inhalation or skin contact.

### 3.7.1 Benzene

Benzene is a common constituent of motor fuels, aviation fuels, and some industrial solvents. Benzene is a known human carcinogen and is the principal concern in the establishment of action levels for "real time" monitoring equipment for fuels and other light distillate products. Continuous organic vapor monitoring will not detect benzene specifically; therefore, airborne action levels for mixtures are based upon the conservative assumption that benzene is a major component. The action level for respiratory protection may be revised once the airborne contaminants are fully characterized. The use of laboratory analyzed charcoal tubes, of benzene-specific detector tubes, or portable gas chromatography may be used to quantify benzene concentrations.

In the event that the presence of benzene is confirmed to be above the OSHA action level, "Benzene Regulated Areas" will be implemented.

### 3.7.2 Flammability

The possibility of flammable vapors from high concentrations of volatile petroleum hydrocarbons may exist from contamination in soil, sediment or groundwater plumes. In addition, fire or explosion may occur from working with flammable tanks, drums, or pipes without proper safeguards. Accordingly, monitoring will be conducted in accordance with Navy RAC SOP 2.1.30, "Personnel Monitoring Procedure," and associated SOPs to identify locations where the possibility may exist of triggering fires or explosion from sparks generated by equipment.

Methane gas may be encountered during excavations as a result of biological processes in soil. Methane is an explosive hazard and can displace oxygen in confined space entry work. Methane will be monitored as an explosive gas. PIDs do not detect methane; therefore, an explosimeter will be used where a potential for methane gas is identified.

### 3.7.3 Unidentified Chemicals

Chemicals not identified or expected may be present at field locations. Until initial sampling, analysis, and atmospheric characterization are complete, site work shall be conducted in levels B or C protection based on the action levels defined for uncharacterized or unknown contamination. Conservative action levels based upon total organic vapor monitoring shall be utilized during field work. Prior to starting site work, the SSHR shall attempt to determine what hazardous chemicals are present.

### 3.7.4 Hydrogen Sulfide

Hydrogen sulfide ( $H_2S$ ) is a colorless, heavier-than-air gas with a characteristic rotten egg odor. Hydrogen sulfide can be fatal if inhaled in concentrations greater than 300 parts per million (ppm). For this reason, when work is conducted in the vicinity of operations that have potential



for significant hydrogen sulfide releases, the SSHR shall continuously monitor the area, and shall establish a method of communication with the workers. An H<sub>2</sub>S monitor shall be maintained at the field work location.

Monitoring equipment and detector tubes shall be available for confined space, trench, excavation, drum or tank work, and if hydrogen sulfide is suspected. This chemical has the property of numbing the olfactory senses after a brief exposure which limits the useability of air-purifying respirators (APRs). APR protection shall only be used if monitoring equipment is continuously available and concentrations are not above 10 ppm, Level B protection shall be worn for concentrations of H<sub>2</sub>S above 10 ppm.

### 3.7.5 Lead

Lead may be encountered as a contaminant of soil and sediments, or in locations near tanks and other process equipment. Contamination is a result of painting operations and spills or leakages of fuels or other chemicals with lead additives. Lead is a toxic heavy metal and a suspected teratogen, mutagen, and carcinogen. Lead may be encountered in inorganic or organic forms.

Where lead is present in concentrations greater than 30 µg/m<sup>3</sup>, work shall be conducted in accordance with the applicable OSHA standards found in 29 CFR 1926.62, and a written "Lead Compliance Program."

### 3.7.6 Mercury

Mercury may be encountered as a contaminant of soil or sediments at locations near process equipment, tanks, and pipelines. Mercury was extensively used as a gauge fluid. Breakage of gauges may have resulted in spillage of mercury and soil contamination.

Mercury is a toxic heavy metal that is volatile at room temperature and may present an inhalation hazard even if no soil disturbance is occurring. Areas suspected of mercury contamination will be screened before work begins either by chemical sampling or with a mercury vapor meter. Respiratory protection appropriate for the level of mercury present will be utilized.

### 3.7.7 Asbestos

Asbestos may be present on overhead pipe racks, tanks, boilers, buildings materials, and landfills. Asbestos occurs in soil as a result of deterioration of insulation or other asbestos containing material (ACM). Often the presence of asbestos cannot be ascertained by visual inspection. Among the products that contain asbestos are transite pipe, ceramic brick floor coverings, friction products, paint and other coatings, insulation, and textiles.

Asbestos is regulated as a carcinogen in accordance with 29 CFR 1926.58. Work in areas where asbestos is present shall be evaluated by the SSHR, and as applicable, OSHA regulations and state requirements shall apply to the work.

Asbestos abatement shall be in accordance with an "Asbestos Abatement Work Plan" and with Navy RAC SOP 2.1.23, "Asbestos Abatement Procedure," and subordinate SOPs.

### **3.7.8 Arsenic**

Inorganic arsenic may be found in areas where certain industrial residue may have contaminated soils. Arsenic may also be found in areas where arsenic was used as a herbicide. Some arsenic compounds may release a toxic gas, arsine, when in an acidic environment. Arsenic is a toxic heavy metal. Inorganic arsenic is regulated by OSHA as a carcinogen.

### **3.7.9 Polynuclear Aromatic Hydrocarbons (PAH)**

Polynuclear aromatic hydrocarbons are produced from petroleum products, coal tar, and from decomposition of vegetation. Many PAHs are recognized human carcinogens. Exposure by any route to PAH (and other recognized human carcinogens) shall be maintained at the absolute practicable minimum level. Skin contact shall not be permitted.

### **3.7.10 Cadmium**

Cadmium is a heavy metal commonly used in paints, alloys, and other industrial products. Cadmium is found naturally in the earth's crust. It is known to be a severe lung and kidney hazard and is a suspected human carcinogen. Cadmium is regulated under 29 CFR 1926.63. Airborne levels that may exceed  $2.5 \mu\text{g}/\text{m}^3$  shall require a written "Cadmium Compliance Program" which will be written by BEI and will become part of the appropriate TSSHP addendum.

### **3.7.11 Polychlorinated Biphenyls (PCB)**

Polychlorinated biphenyls (PCBs), also referred to as Aroclors are synthetic industrial products, which are commonly used as cooling fluid and electrical insulator. PCBs may be found at or near transformers, capacitors, pipelines, tanks, drums, and other areas where PCB materials are stored or used. PCBs are recognized environmental pollutants and suspected human carcinogens. Work involving exposure to PCB materials shall require special bioassay evaluation. Elevated bioassay results may require special medical tests, as determined necessary by the occupational physician.

### **3.7.12 Chlorinated Solvents**

Chlorinated solvents have been widely used at industrial and military sites in large quantities and may exist in free product layers. Chlorinated solvents present a wide range of toxic effects, with certain compounds being highly toxic and others being essentially inert. Chlorinated solvents are often identified by a characteristic chloroform type odor. The PID that may be used for field monitoring has reduced sensitivity (response factor) for some chlorinated hydrocarbons. The use of an FID, detector tubes, gas chromatography, or other methods may be utilized for detection.

Sensing of the characteristic odor is an indication of the need to upgrade respiratory protection and initiate personnel monitoring.

### 3.7.13 Dioxins

Dioxins are produced in production of herbicides and as by-products of combustion of chlorinated hydrocarbons, particularly PCBs and trichlorobenzene. Dioxins are considered highly toxic and are suspected carcinogens, even in trace quantities. Sites where dioxin is potentially present include waste dumps used to dispose of pesticide, and areas of electrical equipment or electrical maintenance shops that have experienced fires. Project work where dioxins are present requires approval of the SHM.

### 3.7.14 Carcinogens

Carcinogens are any chemicals or products capable of causing or inducing cancer or leukemia in humans. Carcinogens are classified, for Program purposes, based upon OSHA, American Conference of Governmental Industrial Hygienists (ACGIH), EPA, IARC, or NTP classifications into recognized or confirmed human carcinogens:

- Class I known human carcinogens
- Class II suspected carcinogens (causes cancer in animals)

When recognized, known, or suspect carcinogens (Class I or Class II) are identified in work areas, they shall be identified in the TSSHP Addendum as such. Exposure by any route to recognized human carcinogens without published exposure limits shall be maintained at the absolute practicable minimum level.

### 3.7.15 Nonaromatic Hydrocarbons

Nonaromatic hydrocarbons refer to a variety of volatile and semivolatile compounds, including simple hydrocarbons such as propane, pentane, and octane. These unspecified compounds are present in petroleum hydrocarbon mixtures and may exist as gas, vapor, liquid, or some combination. The compounds are generally of low toxicity (exception: n-hexane); however, they produce a narcotic effect at moderate concentrations. Exposure to nonaromatic hydrocarbons at these concentrations may affect the operator's ability to operate machinery. The low toxicity of these materials is not a basis for allowing exposures in excess of established limits.

### 3.7.16 Simple Asphyxiants

Materials with low-toxicity hydrocarbon fuels (methane, ethane, propane, butane), welding cover gases (argon, helium, carbon dioxide), and nitrogen may displace oxygen and, if present in large quantities or in confined spaces, produce asphyxiation, and death.

Helium and hydrogen are simple asphyxiants that may affect the measurements of some explosive limit instruments because of high thermal conductivity. Excess nitrogen may similarly affect the measurements of explosive-limit monitoring instruments by reducing the oxygen required for combustion.

### **3.7.17 Chemical Asphyxiants**

Chemical asphyxiants include hydrogen sulfide, hydrogen cyanide and carbon monoxide. Such chemicals replace oxygen on the hemoglobin oxygen transfer system. Level B protection shall be required for protection against chemical asphyxiants above the permissible exposure limit (PEL).

### **3.7.18 Chlorine Gas**

Chlorine gas cylinders are commonly found at military sites, particularly in water treatment plant areas. Chlorine is highly toxic, and even exposure to low concentrations may result in permanent lung damage. Entry into or work in proximity to chlorine gas storage requires special procedures, including the use of emergency escape respirators.

### **3.7.19 Pesticides**

Pesticides potentially used or disposed at the sites range from relatively low-toxicity products to highly poisonous compounds. Exposure to extremely small quantities of some pesticides may result in serious bodily harm, even death. Identification of pesticide containers during field activity requires evaluation by the SSHR before work can proceed. Presence of pesticide at a site requires that protective clothing protocols be implemented during all intrusive activities. Presence of trace amounts of pesticides in soil or sediments may require minimum control measures, based on the evaluation of the SSHR.

### **3.7.20 Landfill Decomposition Gases**

Decomposition of organic materials results in the production of several gases that may present a safety and health concern. Common gases are methane, hydrogen sulfide, and vinyl chloride.

### **3.7.21 Vinyl Chloride**

Vinyl chloride results from the decomposition of chlorinated materials such as plastics and solvents. Vinyl chloride is a recognized human carcinogen. The established OSHA standard for vinyl chloride is 1 ppm as a time-weighted average and 5 ppm as a short-term exposure limit (15 minutes). Where measured concentrations may exceed 10 ppm, only Level B protection may be used. When air purifying respirators are utilized, the filter cartridges shall be replaced daily.

### 3.7.22 Cyanide

Should cyanide be suspected, a "real-time" instrument or colorimetric tubes will be used. Any reading of 4.7 ppm or greater will require workers to be in Level B protection.

Sulfide or cyanide compounds can release toxic hydrogen cyanide gas in acidic environments. Accordingly, extreme caution shall be exercised when using acid (water is considered an acid) where cyanide may be present.

## 3.8 BIOLOGICAL HAZARDS

Dangerous wildlife which may be encountered include poisonous snakes and rodents. Disease-carrying rodents are more likely to be found in disposal areas. Prior to the start of work in a particular PSC, the SSHR shall inspect the work area for dangerous wildlife and instruct workers on the best strategy to avoid contact. Workers shall be trained to identify dangerous wildlife and in general precautions to be followed.

The SSHR shall screen the area for biological hazards during the initial site visit and shall discuss any problems with installation personnel during the pre-work review. The most common hazards anticipated are discussed below.

### 3.8.1 Rattlesnakes/Water Moccasins/Coral Snakes

Personnel should be extremely careful when walking through tall grass, open water, rocks, or debris. If a poisonous snake is encountered, slowly and quietly back away. Inform all personnel at the site of its location. Do not attempt to move or kill a snake as certain species of rattlesnake are protected under state and federal laws. In the event of a snakebite, immediately summon emergency medical services and notify the SSHR. Do not try to move the affected limb; wait for transportation. The venom should be wiped off the skin as venom will attack intact skin. Use of a cold compress or putting the affected limb in an ice cooler retards the spread of the poison.

### 3.8.2 Insects

Mosquitos are expected to be a problem onsite, particularly in wetland conditions which may be encountered. Stinging insects may be found where work will be performed. The SSHR shall provide an appropriate repellent against mosquitoes and other nuisance insects. Workers will be instructed to report the presence of large numbers of bees or other stinging insects at the work site. The SSHR will determine whether removal of the insect nests is required for work to proceed.

Bees, wasps, yellow jackets, black widow spiders, and brown recluse spiders present a potential hazard, but especially for those individuals sensitized to bites or stings. Prior to initial assignment on this project, personnel with known allergic responses to insect stings or bites will be identified, and field supervisors made aware of this condition. These personnel shall also

carry an antidote kit, if so advised by their physician. The SSHR will confirm that the antidote kit is accessible and shall notify the emergency medical service providers in the event of any incident.

In all cases, a victim suspected of being bitten by a black widow spider or brown recluse spider shall receive medical attention. The venom from the brown recluse spider is capable of causing coma and kidney failure in its victim.

Protection against insects, such as protective clothing, repellents, extermination, and training in recognition and identification of harmful insects may be employed.

### 3.8.3 Ticks

Ticks transmit many diverse etiologic agents. Diseases transmitted by ticks include Lyme disease, Rocky Mountain spotted fever, and other viral and rickettsial diseases.

Lyme disease is a spirochete-type bacterial infection that is transmitted to humans and some animals by two species of tick. The deer tick is probably the more prevalent. The female is approximately 1/4 inch long and is black and red in color. Symptoms of Lyme disease include chills, fever, headache, fatigue, stiff neck, and bone ache. Lyme disease presents itself as a rash with a small welt in the center.

Symptoms of Rocky Mountain Spotted Fever include chills, fever, headache, fatigue, stiff neck and bone ache. Spotted fever presents itself as red spots under the skin.

Ticks are normally found in wooded and bushy areas. When walking through tall brush areas, periodically check yourself and your co-workers for presence of any ticks. Ticks burrow into the skin. It is essential to remove the entire tick as soon as it is found. If the head of the tick cannot be removed, medical treatment shall be obtained. Should severe signs of infection or fever develop, the patient should seek prompt medical care.

### 3.8.4 Poisonous Plants

Poisonous plants may be present at the site. Poison ivy, poison oak, and poison sumac are identified by three leaves or five leaves emanating from a stem. The plants contain a resin that causes a delayed allergic hypersensitivity reaction on contact. The resin is active in live, dead, dry, and burned plant parts; and it may be carried through the air. Signs and symptoms are usually evident within 24 to 48 hours after exposure. These include burning, stinging, and blisters. Notify the SSHR if these plants are observed. If exposure or contact occurs, wash the affected area, but do not spread the resin to uncontacted areas.

The SSHR shall determine whether plants which cause adverse effects through skin contact (e.g., poison oak, poison sumac) are present in the work area and identify these to the workers.

Workers will be instructed not to put any plants found onsite into their mouth. Immunization shots may be appropriate in some cases.

### **3.8.5 Vermin**

Rats, mice, squirrels and rabbits are carriers of disease. Where vermin are identified in work areas, the SSHR shall be immediately notified. Bites shall be reported immediately and medical care obtained.

Infections associated with rodent-borne disease are present in the United States. Infections may occur in humans associated with activities that bring humans into contact with rodents, rodent saliva, or rodent excreta. Activities that may bring humans into contact with the etiologic agents causing infection include the following situations:

- Working in areas of field crops.
- Occupying previously vacant buildings.
- Cleaning outbuildings.
- Disturbing rodent-infested areas.
- Visiting areas where rodent populations have increased.
- Entering into crawl spaces or other potential rodent-infested areas.

Transmission of disease may occur through broken skin, contact with conjunctivae, ingestion of contaminated food or water, or inhalation of aerosols. Prevention is through environmental hygiene practices that deter rodents from colonizing the work environment.

Cleanup of rodent-contaminated areas or areas meeting the above criteria shall be performed in Level C protective equipment, including full facepiece respirator and head covering. Vacuuming or dry sweeping shall not be used as this may generate aerosols. Surfaces shall be disinfected by spraying with detergent, water, and disinfectant mixture. Reusable protective clothing shall be decontaminated and disinfected daily. Where rodent infestation is positively identified, all waste shall be disposed in double-bagged containers and shall be marked as infectious.

Workers shall be advised of the hazard and risks of the work. Workers shall be advised that if a fever or respiratory illness develops within 45 days of the potential exposure, they should seek medical attention and inform the physician of potential hantavirus exposure, which may result in severe respiratory distress and plague.

### **3.8.6 Marine Life**

Work in shallow bays may expose personnel to a variety of marine hazards. Project personnel shall not wade barefoot while performing project work. Appropriate foot gear includes boots or waders. Free swimming is prohibited.

### **3.8.7 Pigeon Histoplasmosis**

Pigeons often carry organisms that produce histoplasmosis in humans. The organism is spread to humans by inhalation of pigeon droppings. Droppings shall be considered infectious and be handled similar to rodent waste.

### **3.8.8 Infectious Bloodborne Pathogens**

Personnel may be exposed to infectious bloodborne pathogens, such as the AIDS virus. First aid and other emergency response personnel shall be informed of preventative measures for protection.

## **4.0 SITE CONTROL**

### **4.1 GENERAL REQUIREMENTS**

Program requirements for site controls are specified in Section 4.0 of the PSHP and Navy RAC SOP 2.1.40, "Site Control."

The SSHR and PS shall implement a site-control program established in accordance with Section 4.0 of the PSHP, Navy RAC SOP 2.1.60, "Field Safety Program," and Navy RAC SOP 2.1.40 "Site Control," based on site-specific characteristics.

**NOTE:** Navy has security requirements and site personnel may be required to obtain a Navy access badges.

### **4.2 SITE SECURITY**

Navy RAC bases are for the most part secured sites. Requirements for maintaining local site security while hazardous conditions exist are specified in Section of the PSHP and Navy RAC SOP 2.1.40, "Site Control."

### **4.3 SITE WORK AUTHORIZATION**

Site access and work that are controlled by the Navy RAC Program shall be authorized by either a hazardous work permit (HWP) or a TSSHP Addendum. All HWPs shall be obtained in accordance with Navy RAC SOP 2.1.17, "Hazardous Work Permits." HWPs shall be generated and implemented before work begins for each task requiring an HWP. The HWP shall be generated, in most cases, onsite by the SSHR. The SSHR and PS shall approve all HWPs and revisions.



#### 4.4 HAZARDOUS WORK PERMITS

HWPs shall be prepared and followed for all work in which significant exposure to chemical contaminants is possible, or where significant safety hazards exist. HWPs shall be used for access during drilling operations and during other SSHR-specified activities. Program requirements for preparation and implementation of HWPs are specified in Section 4.1 of the PSHP and Navy RAC SOP 2.1.17, "Hazardous Work Permits."

#### 4.5 CONTROLLED AREA DESIGNATION

The plan for controlled area designation is provided in the TSSHP Addendum. Typically, site activities use a task-control plan that provides a single barrier to delineate the clean, and contamination reduction zones (CRZ) areas from the Exclusion Zone (EZ). The EZ and CRZ also include a small decontamination corridor. Activities in heavily contaminated sites will utilize the standard three-zone system as described in Navy RAC SOP 2.1.40, "Site Control."

A separate vehicle entrance may be established if necessary. A decontamination station for personnel shall be established at the entrance of each CRZ. Additional stations may be established at each access-control point. The SSHR shall establish the layout and arrangement of field facilities during mobilization.

#### 4.6 CONTROLLED AREA ACCESS

Access to controlled areas is accomplished through a program that controls the activities and movements of people and equipment at the project site. Included in this program are controls for chemical, biological, and construction safety hazards.

The TSSHP Addendum will establish the access-control requirements for each site. The following are typical access-control requirements that may be implemented and monitored by the SSHR, or designee.

- Maintain an authorized personnel list.
- Maintain an access control register at the controlled area boundary to record the number and identity of individuals in the area.
- Require personnel to sign the access control log before entering the controlled areas and each time upon leaving.
- Require personnel and equipment to enter the site through the site access-control point.
- Require personnel decontamination stations to be provided and maintained where contact with removable contamination is possible.

An exclusion zone shall be established around each work area prior to the start of intrusive work. The exclusion zones shall be posted and physically barricaded if the SSHR so requires based upon site conditions. Figure 4-1 shows a typical site layout. The site access control points are typically posted as follows:

**DANGER**  
**Controlled Area**  
**Authorized Personnel Only**

Identify Major Contaminants Present:  
(i.e., Organic Solvent-, Polynuclear Aromatic Hydrocarbon-, Oil-, PCB-, Pesticide-)

Identify work (i.e., Excavation in Progress)

Level Protection Required (i.e., Level C protection required)

#### **4.7 SITE COMMUNICATION**

The buddy system shall be used during work in EZs and remote locations. The primary means of communication for workers out of visual range shall be two-way radios.

#### **4.8 FACILITY ACCESS**

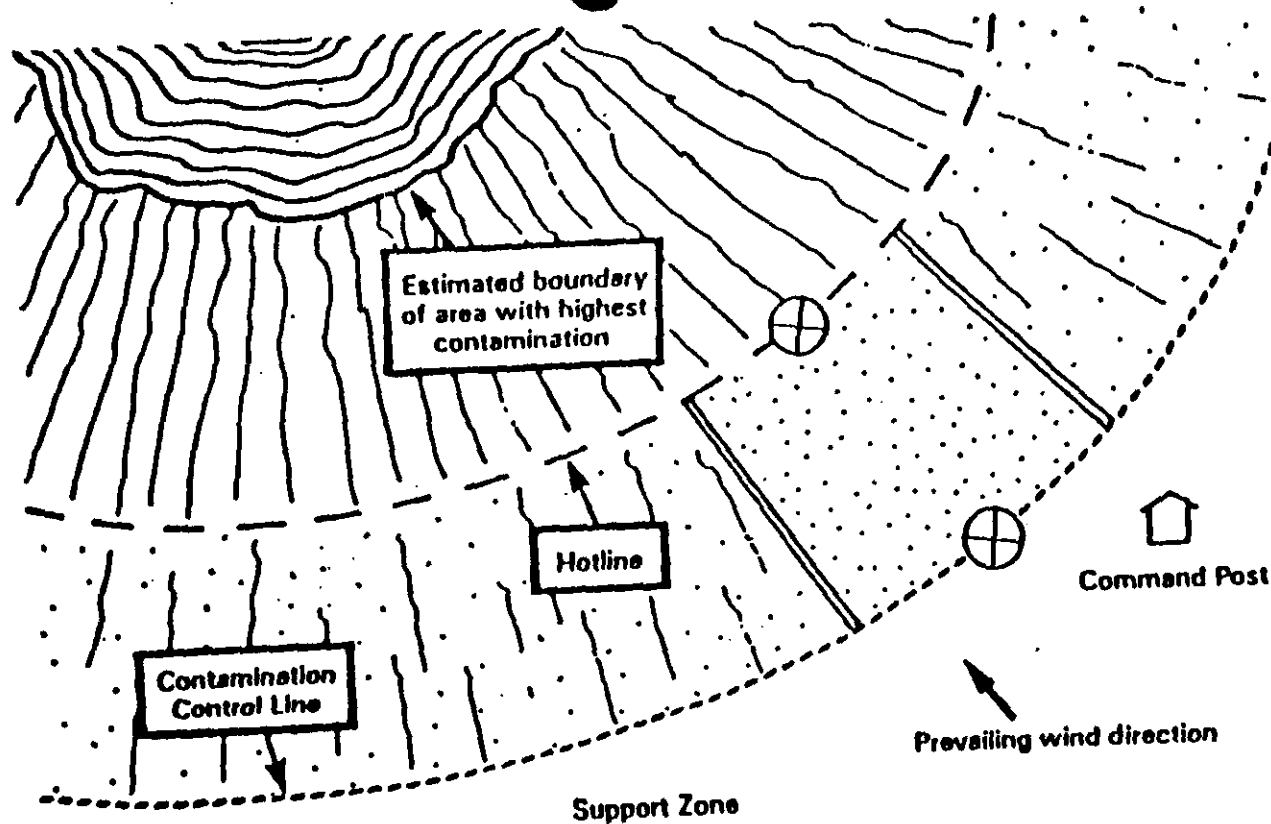
Specific requirements for installation access are established in the TSSHP Addendum. The following information is typically required for access to most military installations:





- Full name
- Social security #
- Employee's company ID#
- Company affiliation
- Driver's license # (state of issue and expiration date)
- Citizenship

For each vehicle (e.g., heavy equipment) requiring site access, the following information shall be available:

- Vehicle make and model
- License # (state and registration date)
- Primary operator
- Responsible company affiliation of operator

The Authorized Personnel Roster shall be prepared and forwarded to the facility, security office, or other activity contact. The PS, or designee, and the SSHR shall maintain a copy of this roster.



-  Access Control Points
-  Contamination Reduction Corridor
-  Contamination Reduction Zone (CRZ)
-  Exclusion Zone

Note: Area dimensions not to scale. Distances between points may vary

Figure 4-1  
Typical Site Layout

All Program personnel shall check-in at the base's security or other authorized gate before accessing any field site. Security shall determine the need for temporary or full-pass status. After gate clearance, personnel may proceed to the task site.

## **5.0 DECONTAMINATION**

### **5.1 GENERAL**

Decontamination facilities shall be established at each work site. The Program will use standard protocols as established in Navy RAC SOPs 2.1.70, "Personal Decontamination," and 2.1.70-B, "Vehicle and Equipment Decontamination," for most sites. Where necessary, special protocols will be established in the TSSHP Addendum. Figures 5-1, 5-2, and 5-3 illustrate the standard order of removal of personal protective clothing. The TSSHP Addendum may contain superseding diagrams, if a different decontamination scheme is to be utilized.

### **5.2 PERSONNEL DECONTAMINATION**

Personnel decontamination will be performed in accordance with Navy RAC SOP 2.1.70. A three-station decontamination system shall typically be established for personnel exiting from exclusion zones. Figure 5-4 depicts a typical 3-stage system.

Personnel shall always wash hand and exposed skin areas upon removing protective clothing or leaving controlled work areas.

### **5.3 VEHICLE AND EQUIPMENT DECONTAMINATION**

Specific procedures for vehicle and equipment decontamination may be established in the TSSHP Addendum and Navy RAC SOP 2.1.70-B, "Vehicle and Equipment Decontamination." Standard practices that will be followed onsite are listed below.

- Decontamination of small equipment shall be performed at the site using the three-wash system or the steam or pressure water described below. Gross contamination shall be scraped or wiped off from equipment before beginning the wash cycle.
- A steam cleaner or pressure washer shall be set up on the site for heavy equipment decontamination.
- A vehicle decontamination pad shall be constructed to contain and collect all decontamination solutions, where required.
- Large items of equipment shall be wrapped prior to transport to the specified decontamination area.

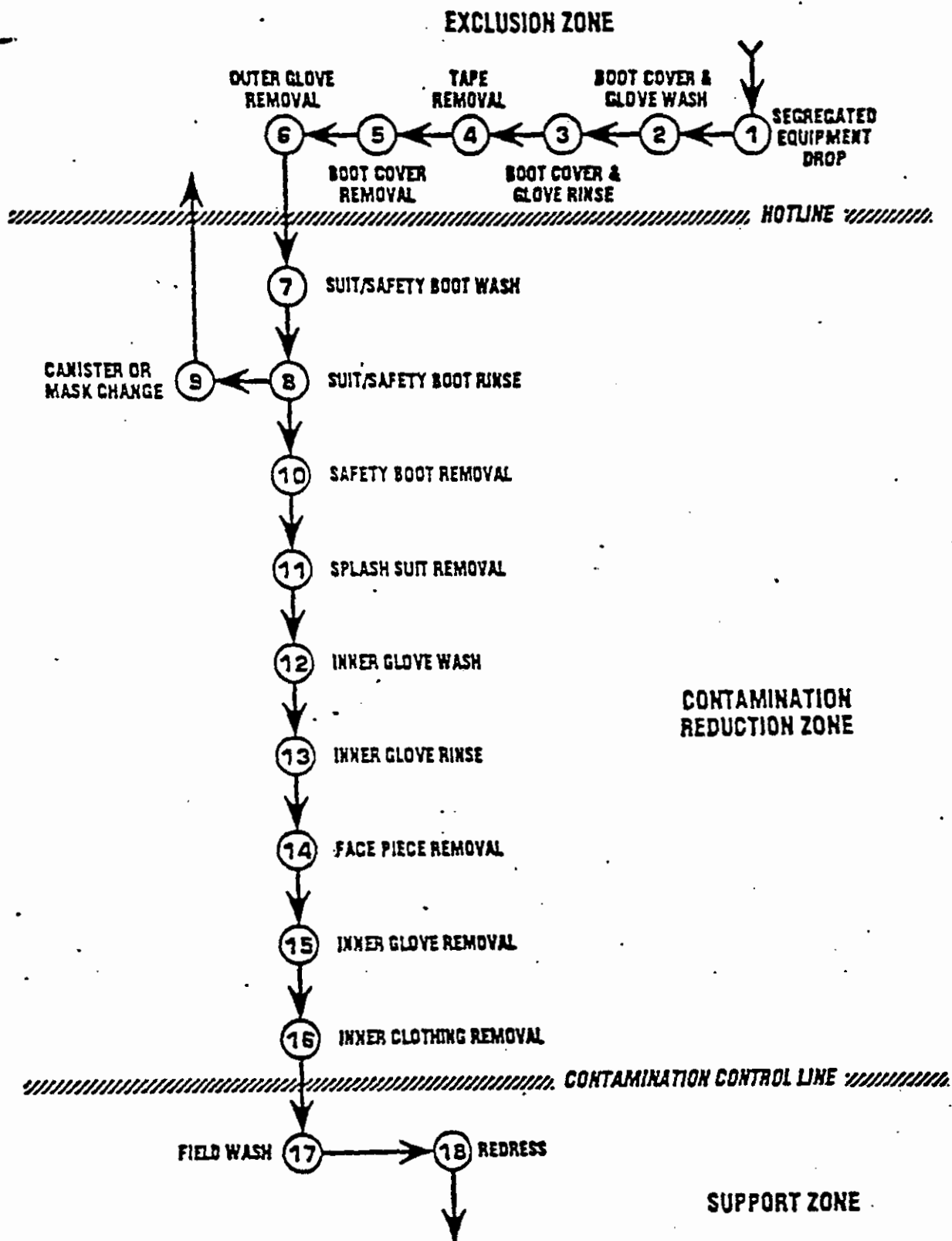


Figure 5-1  
Personal Protective Equipment Decontamination Flowchart for Level C Protection

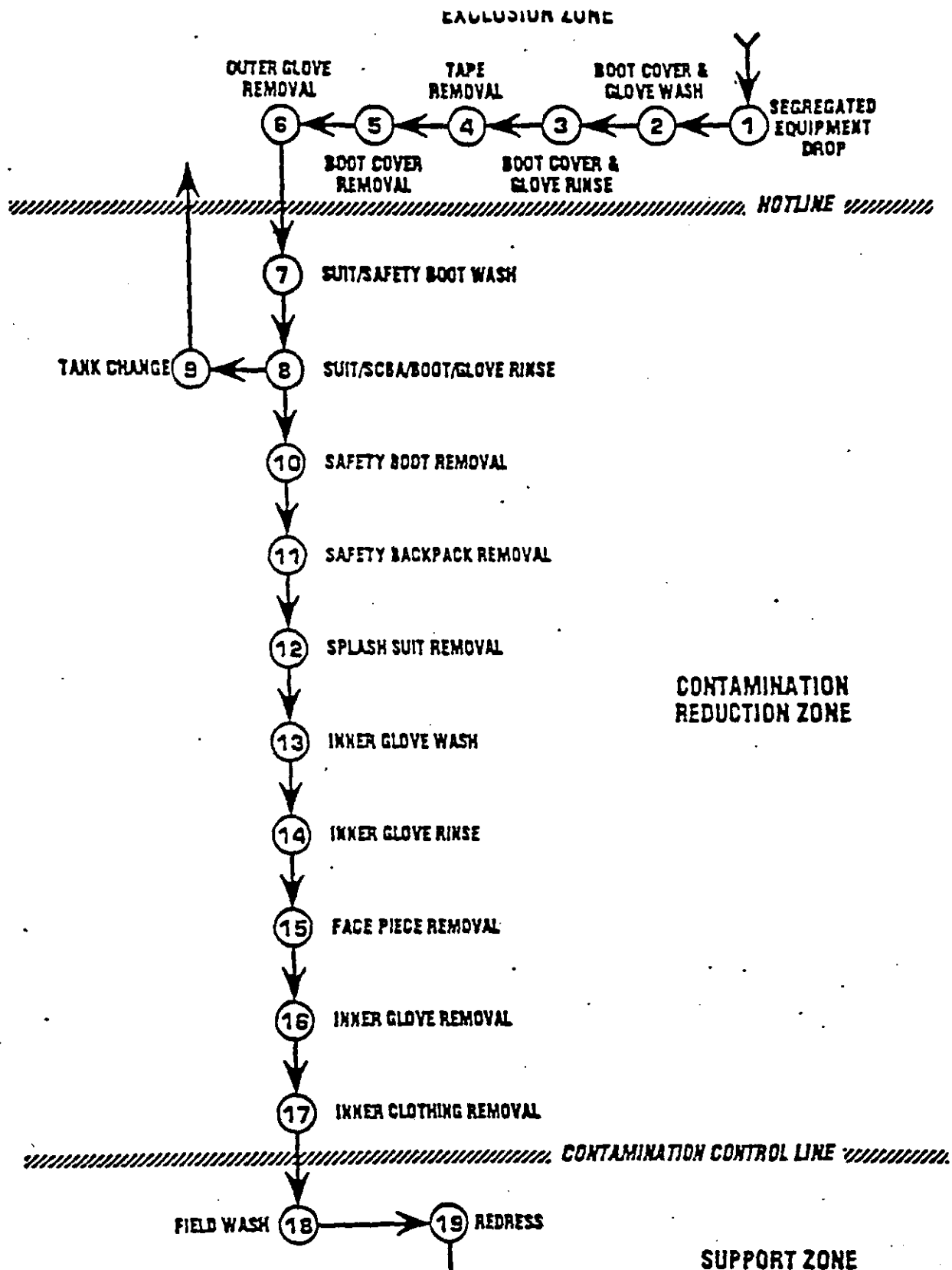


Figure 5-2

Personal Protective Equipment Decontamination Flowchart for Level B Protection

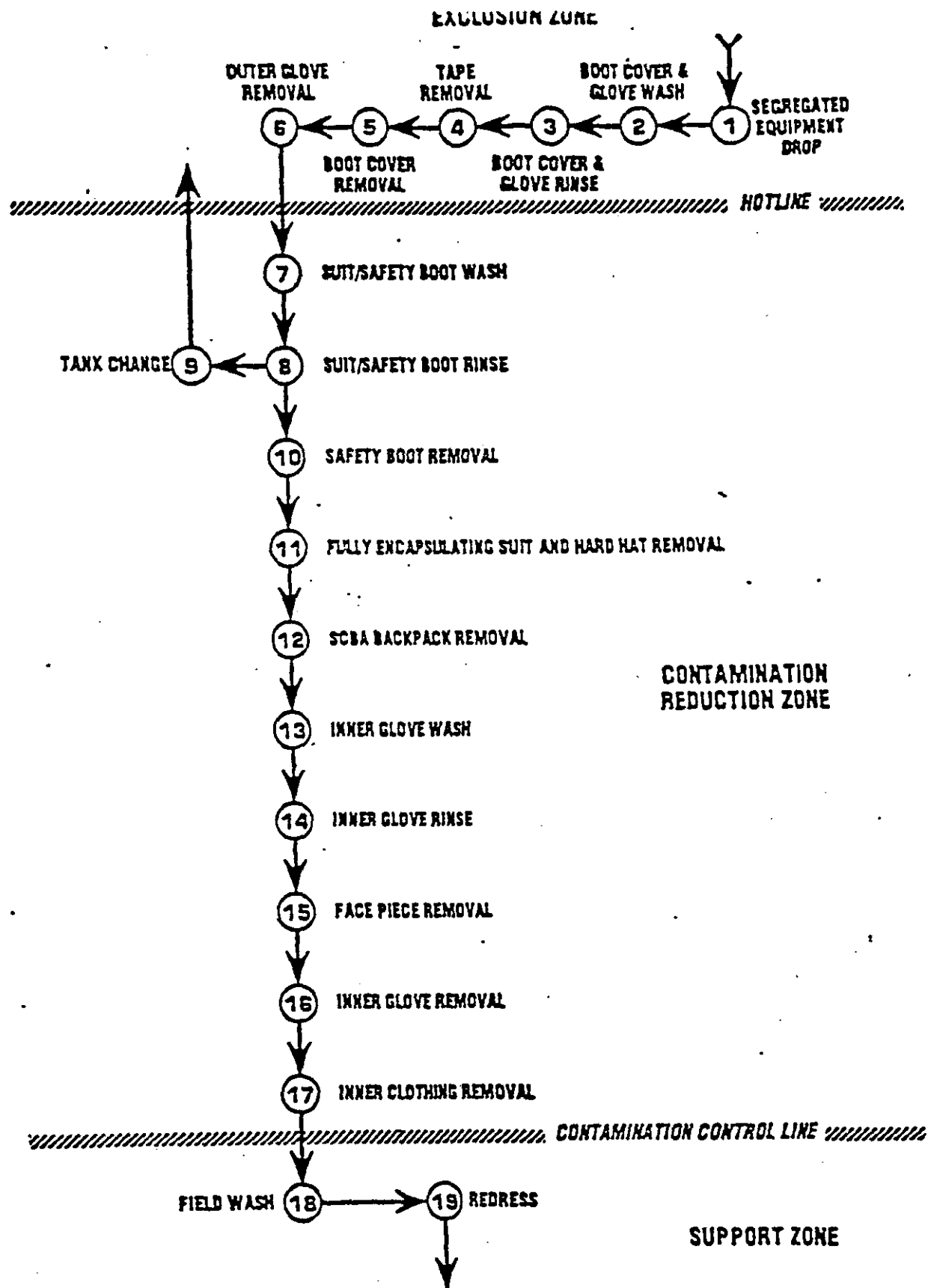
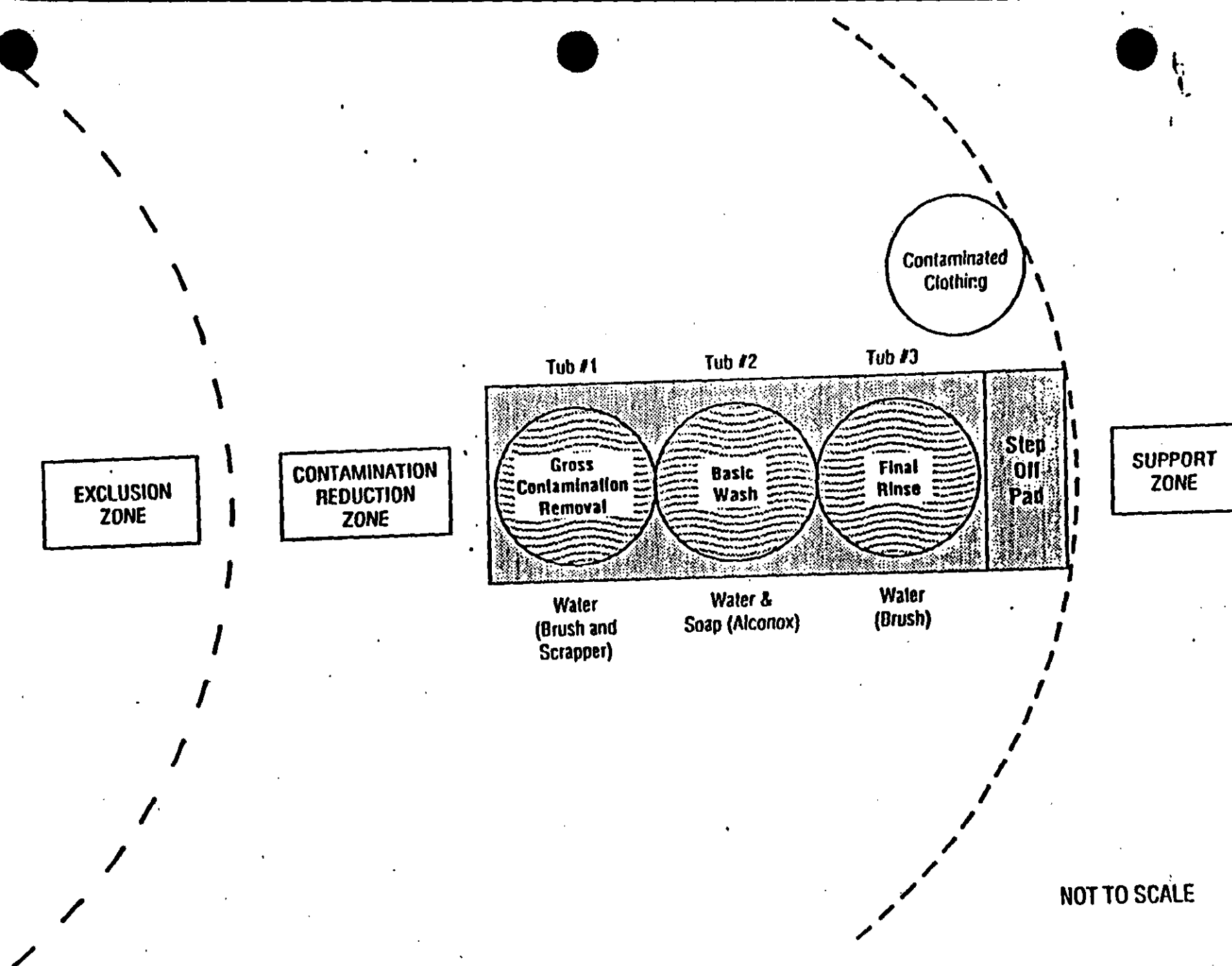


Figure 5-3  
Personal Protective Equipment Decontamination Flowchart for Level A Protection



**Figure 5-4**  
**Typical Three Stage Decontamination Facility Layout**



A record of decontamination shall be maintained based upon visual or instrument inspection. Equipment belonging to team subcontractors, other subcontractors, or rental organizations shall be inspected. Equipment that leaves any facility (government property) boundary shall be deemed to be leaving the custody of the Program, unless it is tagged as not decontaminated and is returned to a Program organization that will take responsibility for the decontamination. Such transfers shall be approved by the SSHR.

## **5.8 CERTIFICATION OF DECONTAMINATION**

The SSHR shall be responsible for preparing a certificate of decontamination when government-furnished equipment or material used on a site is returned to the custody of the government. Forms are available from the SHM for this purpose.

## **5.9 SUBCONTRACTOR REQUIREMENTS**

Each subcontractor shall follow the personnel decontamination procedures as indicated in Section 5.0 and shall decontaminate equipment as necessary to meet technical requirements. Upon completion of final decontamination prior to equipment leaving any facility, the subcontractor shall request an inspection from the SSHR prior to equipment removal from the site and a record of decontamination prepared. Subcontractors are responsible for decontamination to the satisfaction of the SSHR. Equipment includes such equipment as vehicles, trucks, excavators, dozers, drill rigs, trailers, and accessories.

## **5.10 VISITOR REQUIREMENTS**

Visitors shall follow the directions of the SSHR regarding decontamination of personnel and equipment brought inside controlled areas. Equipment shall be wrapped and taped to the maximum practicable extent, as directed by the SSHR, to minimize the need for decontamination.

## **5.11 DECONTAMINATION AREA ARRANGEMENTS**

A base area shall be established for waste storage, vehicle and equipment decontamination, emergency supplies, and other necessary equipment. These sites need not be contiguous, although this configuration may be convenient. The SSHR and PS shall identify the arrangement of the base decontamination facility.

### **5.11.1 Waste Storage and Decontamination Area**

A waste storage area shall be established for temporary storage of spoils, cuttings, decontamination solutions, and other derived waste. This area shall be posted as a waste storage area. Waste handling will be in accordance with the Waste Management Plan.

### **5.11.2 Decontamination Pad**

A decontamination pad shall be constructed on the site, as appropriate, for the decontamination of excavators, drill rigs, dozers, and other such associated equipment. The standard decontamination pad shall be large enough to contain any single piece of equipment with a three-foot border on all sides. A sloped pad with a liquid-collection sump is recommended. The pad shall be constructed to minimize overspray and shall be operated such that all wash water can be contained and collected.

The pad is not required at sites where wash water is allowed to be discharged.

## **6.0 MEDICAL SURVEILLANCE**

### **6.1 GENERAL**

All Program personnel shall be required to participate in the Medical Surveillance Program before being permitted to work on field sites. The Medical Surveillance Program is described in Navy RAC SOP 2.1.80, "Medical Surveillance Program," and subordinate SOPs. Specific exceptions to the medical surveillance requirements shall be identified in the TSSHP Addendum.

### **6.2 PROGRAM PERSONNEL**

Official copies of all medical surveillance documentation for Program personnel shall be maintained at the Oak Ridge Safety and Health Services Department in the Occupational Health Records Management System (OHRMS). Medical hard copy records of a confidential nature shall be maintained by BEI's medical provider.

Subcontractors will be required to provide documentation to BEI as required by the applicable contract prior to working on any Program site for the first time. Team subcontractor personnel shall interface with the SSHR, to establish medical fitness to work on the project. Subcontractor medical surveillance records shall be maintained by the Subcontractor with a copy maintained in BEI's OHRMS. Medical qualification expiration dates, work limitations, and respirator-use approvals shall be entered into the OHRMS database for use by the SSHR. The SSHR shall verify the records are in proper order and forward these records to the Program SHM.

### **6.3 PHYSICIAN'S EVALUATION**

The occupational medical physician shall determine any medical limitations of site workers. The provider shall submit a physician statement to the SSHR for BEI employees and to the Subcontractor for its employees. The Subcontractor shall submit a copy of the physician's statement to BEI for distribution to the SSHR.

## **6.4 SPECIAL MONITORING PROTOCOL**

Special monitoring protocols for specific contaminants shall be specified in the TSSHP Addenda. These results shall be provided to the SSHR.

## **7.0 HAZARD MONITORING PROGRAM**

### **7.1 GENERAL**

Hazard monitoring will be performed at the site as described below.

### **7.2 RESPONSIBILITIES OF SUBCONTRACTORS**

Hazard monitoring will be performed at the site, as described in the following sections. The SSHR will monitor hazards and implement all necessary controls to minimize the hazards.

Each Subcontractor is responsible for the health and well-being of its employees, and, as such the Subcontractor shall enforce its own safety and health program and those specified by the SSHR.

### **7.3 CHEMICAL AGENT MONITORING**

Atmospheric concentrations of chemical agents shall be routinely monitored at all field sites. Chemical agents monitoring includes toxic air contaminants, explosive mixtures, and oxygen deficiency.

Monitoring for chemical agents will be performed routinely by the Subcontractor and periodically by BEI using instrumentation and sampling apparatus as described in Table 7-1, "Chemical Monitoring Plan." Monitoring methods, frequencies, and responsible personnel are specified in the TSSHP Addendum. Sampling techniques and analytical methods are stated in Navy RAC SOPs. Monitoring instrument use, calibrations, and maintenance are described in applicable SOPs.

### **7.4 ENVIRONMENTAL MONITORING**

Environmental monitoring by BEI consists of sampling and monitoring measurements performed at or beyond the site boundary or other locations. The purpose is to establish public exposures related to field operations. Depending on the action levels and instrument detection limits, an approved EPA or NIOSH method of sampling will be used. Environmental monitoring includes specialized techniques and methods used to provide high sensitivity and specificity for assessment of environmental concentrations of contaminants. Depending on the action levels and instrument detection limits, an approved EPA or NIOSH method of sampling will be used. Environmental monitoring programs, where required, are described in the TSSHP Addendum. Environmental monitoring is not typically performed during activities where the potential for significant emission is minimal.

**Table 7-1**  
**Chemical Monitoring Plan**

Chemical	Type of Monitoring	Typical Instrument (and options)	Calibration <sup>4</sup> Frequency	Calibration Method <sup>5</sup>
Total Hydrocarbons	direct reading	PID <sup>1</sup> or FID <sup>2</sup>	at least daily	SOP S&H 2.1.30B, 2.1.30E, manufacturer's instruction manual
Explosive Mixtures and Methane	direct reading	Explosimeter	at least daily	SOP S&H 2.1.30H, manufacturer's instruction manual, daily checks
Toxic Gases	direct reading	PID/FID <sup>3</sup>	at least daily	SOP S&H 2.1.30B, 2.1.30E, manufacturer's instruction manual, daily checks
		Detector tube	n.a.	None recommended by manufacturer
Benzene	direct reading	Detector tube	n.a.	None recommended by manufacturer
		Photovac GC (or equivalent)	at least daily	Manufacturer's instruction manual, daily checks
Heavy Metal	sampling	37mm filter and personal sampling pump	daily (pump) (pre- and post-)	SOP S&H 2.1.3, 2.1.30G, 2.1.30H
Mercury	direct reading	Jerome analyzer (or equivalent)	at least daily	Manufacturer's instruction manual
Hydrogen Sulfide	direct reading	Gastech (or equivalent)	at least daily	Manufacturer's instruction manual, daily checks
		Detector tube	n.a.	n.a.
Vinyl Chloride	direct reading	Detector tube	n.a.	None recommended by manufacturer

<sup>1</sup> Photoionization detector

<sup>2</sup> Flame ionization detector

<sup>3</sup> Use of both PID and FID is required.

<sup>4</sup> Calibration records are to be kept onsite.

<sup>5</sup> Reference to Navy RAC Standard Operating Procedures (SOPs) Safety and Health.

Where screening measurements indicate potential releases of contaminants beyond the controlled area and where facility personnel are potentially exposed, the SSHR shall prescribe measures to control releases. Such measures may include expansion of the controlled area, environmental monitoring to assess conditions, and use of engineering or administrative controls.

## **7.5 AREA MONITORING**

Area monitoring consists of monitoring a work location without specific reference to any individuals presence in the area. Area monitoring is performed by the Subcontractor to identify the general potential for individual exposure and to establish the protective equipment requirements for personnel who may enter that area. Area monitoring is conducted to identify exposures above OSHA, ACGIH, or EPA limits. Sampling methodology shall follow NIOSH protocol. EPA guidelines for offsite emissions, and Navy RAC SOP 2.1.30-H, "Air Surveillance," and supporting SOPs. Action levels for use of PPE and respiratory protection are based upon area monitoring using field survey screening instrumentation within the controlled area. Action levels may vary depending on the site locations and the presence or absence of particular constituents.

### **7.5.1 Area Monitoring (organic vapors)**

Area monitoring shall be performed at all field sites. Area monitoring is the primary means of decision making with regard to PPE and respiratory protective equipment. The minimum instrumentation for monitoring is the PID or FID meters as shown in Table 7-1, "Chemical Monitoring Plan." Basic action levels for PPE and respiratory protection based upon air-monitoring results for sites contaminated with organic vapors (i.e., solvents) or gases are provided in Table 7-2, "Monitoring Methods and Action Levels for Vapors and Gases."

### **7.5.2 Area Monitoring (unidentified product sites)**

Area monitoring for sites contaminated with unknown contaminants, or mixtures of organic chemicals, and petroleum hydrocarbons, shall include a careful initial airborne characterization. The characterization shall be followed by specific monitoring techniques after the constituents are identified. The minimum instrumentation for unidentified product or mixed hazard (hydrocarbons and other chemicals) is a combination PID/FID detector or separate PID and FID instruments and detector tubes for benzene, chlorinated hydrocarbons, and vinyl chloride.

### **7.5.3 Dust Monitoring**

Dust monitoring is performed at sites where a potential for exposure to toxic metal dusts or toxic nonvolatile or semivolatile compounds exists. Dust exposure may be monitored as specified in the TSSHP Addendum. Dust exposure is monitored with a forward scattering, pulsed-light-emitting-diode sensing configuration (i.e., Miniram). This system measures total dust or respirable dust; however, individual toxic constituents are not determined. Action levels for toxic dusts are established based upon OSHA or EPA standards. Where synergistic mixtures are

**Table 7-2**  
**Monitoring Methods and Action Levels<sup>1</sup> for Vapors and Gases**

Hazard	Method	Action Level <sup>4</sup>	Protective Action
Volatile Organic Hydrocarbons (benzene present or suspected) <sup>2</sup>	PID, FID <sup>3,5</sup>	$\geq 1 \text{ ppm} \leq 50 \text{ ppm}$	Air-purifying respirator, full facepiece Level C protection
		$> 50 \text{ ppm}$	Supplied air
		$> 500 \text{ ppm}$	STOP WORK
Benzene (not present) <sup>4</sup>	PID, FID <sup>3</sup>	$> 25 \text{ ppm}$	Air-purifying full facepiece respirator Level C protection
		$> 200 \text{ ppm}$	Supplied air Level B protection
		$> 500 \text{ ppm}$	STOP WORK
Combustible Gas	Explosimeter <sup>3</sup>	$0\% \leq \text{LEL} \leq 5\%$	No action
		$5\% < \text{LEL} < 10\%$	Start continuous monitoring. Allow only classified electrical equipment and nonsparking tools
		$\text{LEL} \geq 10\%$	Stop work, ascertain source of gas, engineer level down
Oxygen Concentration	Oxygen analyzer	$< 19.5\%$	Leave area, evaluate reason for deficiency; remonitor remotely or enter with IDLH entry PPE (SCBA)
		$19.5 - 22.5\%$	Normal range
		$> 22.5\%$	Elevated reading, check calibration, investigate cause, stop any potential spark-producing activity, reduce oxygen level

<sup>1</sup>All actions levels are above background.

<sup>2</sup>Action level based on 20% benzene; action level should be reestablished based on periodic analysis of atmosphere.

<sup>3</sup>Calibration gas is isobutylene.

<sup>4</sup>Confirm benzene is less than 1 ppm with benzene detector tube or by GC analysis.

<sup>5</sup>Suitably calibrated.

present, airborne action levels will be calculated. Base action levels for total dust and various toxic metals are provided in Table 7-3, "Action Levels for Total and Respirable Dusts."

#### **7.5.4 Metals Monitoring**

Metals have varying action levels depending upon specific type. NIOSH sampling methods and analysis shall be performed whenever there exists the potential for exposure above OSHA's standards. Depending on the suspected exposure level, the laboratory shall provide a fast turn-around analysis to assist the SSHR in upgrading or downgrading the level of protection. Table 7-4, "Action Levels and Protective Measures for Indirect Sampling of Specific Metals," provides OSHA's action levels, PELs, and protective measures based on indirect sampling for specific metals.

### **7.6 NOISE MONITORING**

Noise exposure will be controlled to within the OSHA limits. Generally, this will be accomplished by issuing hearing protection to workers who are required to operate heavy equipment, remain near heavy equipment, or who are otherwise exposed to high noise levels.

A noise survey will be performed by the Subcontractor whenever noise levels may exceed 85 dBA. For workers whose daily duties require movement between areas of variable noise exposure, noise dosimeters will be utilized. For fixed locations or installations, such as machinery areas, pump rooms, etc., a noise survey will be performed to determine if a hearing-protection warning sign must be posted. Areas identified as potential noise-hazard areas will be evaluated for compliance with the OSHA noise standard for general industry, 29 CFR 1910.95 and in accordance with Navy RAC SOP 2.1.21.

### **7.7 RADIATION MONITORING**

Each site will maintain the capability to spot check for radioactivity should suspect materials be discovered during site activities (i.e., instrument dials, etc.). A radiation detection instrument(s) should be available which will detect alpha and beta/gamma radioactivity. Basic action levels for radionuclides are provided in Table 7-5, "Action Levels for Radionuclides at the Site." The SSHR shall provide guidance for spot monitoring for radioactive materials. All radiological survey instruments will be calibrated, maintained, and used per SOP S&H 2.1.110-C, 2.1.110-D, "Radiological Survey Instrument, Calibration, Maintenance, and Use."

#### **7.7.1 Solar Radiation**

The SSHR will require the use of Project supplied sunblock and clothing to minimize the effects of solar radiation on the skin.

**Table 7-3**  
**Action Levels for Total and Respirable Dusts**

Hazard	Method	Action Level	Protection
Total Dust (unknown)	Miniram	< 1 mg/m <sup>3</sup>	No action
		> 1 mg/m <sup>3</sup>	APR*
Total Dust (toxic)	Miniram	< 0.5 mg/m <sup>3</sup>	No action
		> 0.5 mg/m <sup>3</sup>	APR*
Total dust (nuisance)	Miniram	< 10 mg/m <sup>3</sup>	No action
		> 10 mg/m <sup>3</sup>	APR*
Respirable Dust (nuisance)	Miniram	< 5 mg/m <sup>3</sup>	No action
		> 5 mg/m <sup>3</sup>	APR*

\*Air purifying respirators



**Table 7-4**  
**Action Levels and Protective Measures for Indirect Sampling of Specific Metals**

Hazard	Method	Action Level*	Protective Action
Specific Metal <sup>1</sup>	Personal Monitoring		
Chromium	NIOSH	0.5 mg/m <sup>3</sup> PEL	Air-purifying respirator
Chromium (VI)	NIOSH	0.05 mg/m <sup>3</sup> PEL	Air purifying respirator
Nickel (sol)	NIOSH	0.1 mg/m <sup>3</sup> PEL	Air-purifying respirator
Nickel (insol)	NIOSH	1.0 mg/m <sup>3</sup> PEL	Air purifying respirator
Mercury (alkyl)	NIOSH	0.01 mg/m <sup>3</sup> PEL	Air-purifying respirator
Zinc	NIOSH	1.0 mg/m <sup>3</sup> PEL	Air-purifying respirator
Vanadium	NIOSH	0.05 mg/m <sup>3</sup> PEL	Air-purifying respirator
Lead	NIOSH	0.05 mg/m <sup>3</sup> PEL	Air-purifying respirator, bioassay, engineering control
	NIOSH	0.03mg/m <sup>3</sup> AL	Medical surveillance, lead compliance program required
Cobalt	NIOSH	0.05 mg/m <sup>3</sup> PEL	Air-purifying respirator
Copper	NIOSH	0.1 mg/m <sup>3</sup> PEL	Air purifying respirator
Cadmium	NIOSH	0.005 mg/m <sup>3</sup> PEL	Air-purifying respirator bioassay, engineering control
	NIOSH	0.0025 mg/m <sup>3</sup> AL	Medical surveillance, cadmium compliance program required
Selenium	NIOSH	0.2 mg/m <sup>3</sup> PEL	Air-purifying respirator
Arsenic	NIOSH	0.01 mg/m <sup>3</sup> PEL	Air-purifying respirator, bioassay, engineering control
	NIOSH	0.005 mg/m <sup>3</sup> AL	Medical surveillance

\*Based on OSHA Standards.

**Table 7-5**  
**Action Levels for Radionuclides at the Site**

Type Measurement	Action Level	Action
External Gamma	> 0.1 Mr/hour	Contact SHM
Beta-Gamma Contamination	$\geq 500$ dpm/100 cm <sup>2</sup>	Contact SHM
Alpha Contamination	$\geq 10$ dpm/100 cm <sup>2</sup>	Contact SHM

### 7.7.2 Nonionizing Radiation

The need for nonionizing radiation surveys will be identified in the TSSH Addendum. The need for nonionizing radiation surveys is expected to be limited.

## 7.8 HEAT STRESS

Wearing PPE puts a hazardous waste worker at considerable risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, work load, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses at the hazardous waste sites, regular monitoring and other preventive precautions are vital.

Refer to Navy RAC SOP 2.1.60-C, "Heat Stress Control," for additional details on the signs, symptoms, and first aid for heat stress conditions. Basic action levels for heat stress monitoring are provided in Table 7-6, "Frequency of Physiological Monitoring for Fit and Acclimated Workers."

For workers wearing semipermeable or impermeable encapsulating ensembles (i.e., polyethylene-coated Tyvek suits), the ACGIH guidelines for heat stress evaluation cannot be used. When the temperature in the work area is above 70°F (21°C), or encapsulating ensembles are used, heat stress evaluations shall be performed by the SSHR. To prevent the onset of heat-related effects, the SSHR will implement the following controls.

- Workers will receive physiological monitoring prior to work, during breaks, and at the end of the work shift. If required, more frequent monitoring will be performed. Physiological monitoring will include measurement of the body temperature using an oral thermometer or equivalent device, and measurement of changes in the worker's heart rate.
- The work/rest regimen specified in the most current ACGIH handbook shall be observed if the worker's heart rate exceeds 110 beats per minute, or the oral temperature exceeds 99°F.
- A shaded rest place will be provided for required rest periods.
- Cool water (50° - 60°F) will be provided, and workers will be encouraged to drink frequently to replace body water lost through perspiration.
- The symptoms of heat stress will be reviewed with the workers on a frequent basis during daily safety briefing. In addition, workers will be instructed to look for heat stress symptoms in their fellow workers:

Medical attention shall be provided to any worker exhibiting severe heat stress symptoms.

**Table 7-6**  
**Frequency of Physiological Monitoring For Fit and Acclimated Workers<sup>1</sup>**

<b>Adjusted Temperature<sup>2</sup></b>	<b>Normal Work Ensemble<sup>2</sup> After Each Break</b>	<b>Impermeable Ensemble After Each Break</b>
90°F (32.2°C) or above	45 minutes of work	15 minutes of work
87.4-90.0°F (30.8 - 32.2°C)	60 minutes of work	30 minutes of work
82.5 - 86.5°F (28.1 - 30.8°C)	90 minutes of work	60 minutes of work
77.5 - 82.5°F (25.3 - 28.1°C)	120 minutes of work	90 minutes of work
72.5 - 77.5°F (22.5 - 25.3°C)	150 minutes of work	120 minutes of work

<sup>1</sup>Work rest regimen is based on pulse rate and oral temperature.

<sup>2</sup>A normal work ensemble consists of coveralls or other cotton clothing with long sleeves and pants.

In addition to hazards produced by heat, the intense sunlight expected during the work may cause serious sunburn to exposed skin. The SSHR will instruct workers to be watchful for indications that they are receiving a sunburn and require the use of sunscreen with the highest sun protection factor (SPF), as appropriate.

## **7.9 PERSONNEL MONITORING**

Personnel monitoring will be initiated if the action levels for survey instruments as described in this plan or the TSSHP Addendum are exceeded. The SSHR is responsible for performing personal monitoring of Program employees. Personnel monitoring will be conducted in accordance with Navy RAC SOP 2.1.30, "Hazard Monitoring Procedure," and applicable SOPs.

## **7.10 BIOLOGICAL AGENTS**

Biological agent atmospheric monitoring will not be performed as a routine measure. The SSHR will monitor for hazardous biological agents and will maintain an appropriate awareness level among all site workers.

# **8.0 PERSONAL PROTECTIVE EQUIPMENT PROGRAM**

## **8.1 GENERAL**

Personal Protective Equipment (PPE) consists of three components: standard safety equipment required on the site, special PPE (fall protection, water safety), and respiratory protective equipment.

Standard safety equipment is described in Navy RAC SOP, 2.1.60, "Field Safety Program." Protective equipment for chemical hazards is described in Navy RAC SOP 2.1.60-A, "Personnel Protective Equipment." In addition, all task-specific safety requirements will be complied with by all project and subcontractor personnel entering a site.

## **8.2 EQUIPMENT**

The TSSHP Addendum will establish the proposed initial PPE ensemble for tasks with exposure potential. The various types of PPE and definitions of the standard ensembles available for the Navy RAC project are discussed in SOP 2.1.60-A.

The level for a particular operation shall be determined by the SSHR at the start of work. This level may be altered as conditions change. The SSHR shall identify special requirements on a HWP, which shall be posted at the task site.

## **9.0 RESPIRATORY PROTECTION PROGRAM**

### **9.1 GENERAL**

Use of respiratory protection will be in accordance with applicable regulations and Navy RAC SOP 2.1.65 A-E, "Respiratory Protection Program," and subordinate SOPs.

Respirators shall be selected from Program-approved devices based upon an assessment of the nature and extent of hazardous atmospheres that are anticipated to be encountered during field activity. The initial respirator assignment for each operation is provided in the TSSHP Addendum and on the HWP.

### **9.2 MEDICAL SURVEILLANCE**

Program participants who are required to utilize respiratory protection shall be fully qualified according to Navy RAC SOP 2.1.80, "Medical Surveillance Program." Prior to beginning work and in accordance with Navy RAC SOP 2.1.65-B, "Respirator Fit Testing," and SOP 2.1.80, each user shall have the following certificates:

- Physician's statement, which includes respirator-use certification within the past 12 months
- Fit-test certificate completed within the past 12 months for the model and size of respirator to be used

### **9.3 FIT TESTING**

All respiratory protection program participants shall receive an annual fit test in accordance with SOP 2.1.65-B that is valid for the make, model, and size of respirator fitted.

In the event Subcontractor personnel do not have proof of a current fit test for the assigned respirator, a fit test shall be conducted for the individual prior to assignment to field work that may require a respirator.

### **9.4 RESPIRATOR CLEANING AND MAINTENANCE**

Each respirator user shall be issued a respirator for exclusive personal use and will be trained in its use, care, and maintenance per 29 CFR 1910.134.

If respirators are shared, such as for emergency-use devices, a qualified individual is assigned the responsibility for the care, maintenance, inspection, cleaning, and sanitizing of each respirator at the end of each shift. When respirators are not shared, each individual shall be responsible for cleaning and routine maintenance of his/her own respirator.

Each respirator user shall be instructed to inspect his/her respirator prior to each use, after each use, and after cleaning in accordance with Navy RAC SOP 2.1.65-C, "Respirator Maintenance."

## **9.5 RESPIRATOR CLEANING SUPPLIES**

Routine cleaning during field work shall be accomplished at the respirator cleaning station located adjacent to the access control point or other designated areas. All necessary supplies shall be provided for workers to clean and sanitize their respirators. (Note: Decontamination does not constitute respirator cleaning, but is always performed before respirator cleaning.) Supplies provided by the SSHR shall include:

- Moist treated wipes
- Cleaning/sanitizing solution
- Cleaning solution basins
- Soft-bristle scrub brushes
- Rinse basins
- Drying area
- Clean storage bags (zip-lock type)

## **9.6 SPECIAL TRAINING**

Special training is required for the use of Type C (airline supplied) respirator and self contained breathing apparatus (SCBA). Personnel shall demonstrate training as evidenced by a copy of the training certificate, a letter or certificate from their employer stating that they are trained in the use of this equipment.

## **10.0 TRAINING ASSIGNMENTS**

### **10.1 BASIC TRAINING REQUIRED**

All Program, and subcontractor employees involved with field activities shall have completed a 40-hour (or 24-hour depending on exposure potential) safety and health training course in accordance with the hazardous waste training requirements specified in 29 CFR 1910.120. Personnel directly supervising employees shall have received the 8-hour supervisor's training for hazardous waste operations. All personnel required to meet the above requirements shall be current with respect to the 8-hour refresher requirements of 29 CFR 1910.120. Other training that may be required is identified in SOPs and TSSHP Addendums. Table 10-1 provides the training assignment matrix.

### **10.2 SITE-SPECIFIC TRAINING**

Prior to commencing work activities, all personnel shall be required to attend a Site-specific Safety and Health Orientation given by the SSHR or designee. This meeting is required by Navy, Program policy, and OSHA. Attendance at the meeting is mandatory for all project

**Table 10-1**  
**Training Assignment Matrix**

Category	40-Hour Basic	8-Hour Refresher	24 Hours Supervised Experience	8-Hour Supervisor/ Manager Refresher	Site <sup>1</sup> Specific	Navy RAC Orientation	Hazard Communi- cation	Special Equipment Use <sup>2</sup>	Radiation Training	Noise Training	Special Chemical Training	DOT HAZMAT Training
Team Employee	x	x	x		x	x	x	x	x	x	x	DP <sup>3</sup>
Supervisor	x	x	x	x	x	x	x	x	x	x	x	DP
Subcontractor	x	x	x	x	x	x	x	x	x	x	x	DP

<sup>1</sup>Site-specific orientation may be combined for visitors, subcontractors, temporary Team personnel and vendors.

<sup>2</sup>For those employees involved in supplied air operations, SCBA, heavy equipment, steam or high water pressure operations.

<sup>3</sup>DP means designated persons.



### **10.5.2 Training**

The SSHR shall conduct hazard communication training and maintain records thereof. Information on chemical, physical, and biological agents identified during work will be made available as part of the site informational program.

### **10.5.3 Labeling**

The SSHR shall assure that manufacturer labels are not defaced, altered, or removed, and that hazard information remains legible.

### **10.5.4 Worker Informational Program**

The SSHR shall provide information concerning levels of exposure, site hazards, planned future activity at the site, and other relevant and appropriate information to all site workers associated with the Project by written informational bulletins and by participation at daily meetings and weekly tool box, or tailgate meeting.

### **10.5.5 Worker Information Program**

Special training requirements, such as radiological safety, unexploded ordinance, etc., should be specified in the TSSHPs.

## **11.0 SUBCONTRACTOR REQUIREMENTS**

### **11.1 COMPANY REQUIREMENTS**

The subcontractor representative shall provide the following to BEI in advance of site work as specified in the Subcontract:

- Designation of the competent person for excavation, trenching, etc. as required.
- Designation of the safety and health representative.
- Designation of the company safety and health official or manager.
- Copies of the subcontractors safety and health program, injury and illness prevention program, accident record, and code of safe work practices, as applicable.
- MSDSs and product names index for all chemical products brought on-site.
- Written agreement to follow and enforce the Navy RAC Program Safety and Health Policy in addition to its own requirements applicable to subcontractors.

## 11.2 PERSONNEL DOCUMENTATION REQUIREMENTS

Subcontractor shall provide the following documents to BEI, prior to beginning work:

- Physicians statement for hazardous waste site work.
- Physicians statement for respirator use, if such use is contemplated.
- Special bioassay test results (i.e., lead, cadmium, PCBs).
- Respirator fit-test certificate (for each model and size that may be required).
- Statement of three days supervised field experience on a hazardous waste site.
- Training course certificate, 40-(or 24)-hours.
- Refresher training course certificate (8-hour) (after one year from initial training).
- Supervisor training certificate (8-hour) (for supervisors).
- First aid/CPR training certification (only one person per site).
- Respirator training certificate for special devices.
- Employer's certification that the employee has completed training to a level required by his/her job function and responsibilities.

## 11.3 SITE-SPECIFIC REQUIREMENTS

The Subcontractor shall provide the following to BEI prior to bringing equipment to the site:

- Documentation of inspection and certification by a competent person of safe operating condition for each item of machinery or mechanized equipment (i.e., dozer, truck above 1 ton, manlift).
- Demonstrate operator proficiency in operation and maintenance of the equipment through documented training and/or experience.

## 12.0 FIRST-AID PLAN

### 12.1 GENERAL

A minimum of one person will be onsite during field work who have a valid certificate in basic first aid/CPR from the American Red Cross or equivalent.

Each Subcontractor will be required to provide one first aid/CPR-qualified individual on each site. This requirement may be met if two sites are within one-half mile of each other and communications are in place.

First-aid kits will be maintained by each Subcontractor. A five-gallon supply of emergency deluge water shall be available and reserved for emergency use. Each Subcontractor shall maintain at each work location at least two eyewash bottles (one-quart capacity each) available for immediate use. The SSHR shall verify weekly that the first-aid supplies are available.

Qualified personnel may use the first-aid kits to administer first aid to any workers who are injured. The SSHR shall verify daily that first aid/CPR qualified personnel are onsite. The SHM shall publish a list of qualified team first-aid providers on a regular basis.

When responding to serious personnel injuries, the Emergency Coordinator or the SSHR will contact the appropriate authorities (e.g., the fire department, a doctor, paramedics, or the police).

Severely injured personnel will be transported to the hospital by ambulance service. Site personnel will transport injured persons to the hospital only if an ambulance service is not available in a timely manner. Life-saving care shall be provided immediately, without regard for consideration of decontamination requirements. In the presence of strong acid or caustics, caregivers shall don appropriate protection.

## **12.2 BLOODBORNE PATHOGENS EXPOSURE CONTROL**

All personnel should be aware of the potential for transmission of disease from contact with bodily fluids. Assume all bodily fluids are potentially infectious and use appropriate precautions. Controls to be considered are as follows:

- Use the victim's hand to control initial bleeding.
- Use available protective gear (Tyvek, gloves) to prevent contact with body fluids.
- Promptly wash after contact with body fluids.
- Use rescue breather for CPR.

## **12.3 FIRST-AID TRAINING**

Program employees will be offered an 8-hour First Aid/CPR/Oxygen Administration course every three years and a 4-hour CPR refresher course annually. Subcontractors are responsible for training their employees.

## **13.0 GENERAL SAFETY REQUIREMENTS**

### **13.1 GENERAL**

Safety rules for the site are contained in Navy RAC SOPs 2.1.60, "Field Safety Program," 2.1.40-C, "Electrical Safety," and other SOPs. Refer to those procedures and the reference documents listed in Section 1.0 for a complete list of safety requirements. An abbreviated list of safety rules is described.

### **13.2 INSPECTIONS**

Frequent and regular safety and health inspections shall be conducted at each work site. The SSHR shall conduct a daily inspection of the workplace. This inspection shall be documented on standard forms and deficiencies shall be tracked until corrected. The PS and Subcontractor Superintendent should also participate in a weekly inspection.

In addition to the daily inspections performed by the field team, the SHM or designee shall perform frequent audits of field work sites in order to insure compliance with Program requirements. Audits shall similarly be documented and deficiencies tracked until documented closure of site activity.

### **13.3 GENERAL SAFETY RULES**

The following safe-work practices shall be enforced at the site.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of material will be prohibited in any area where the possibility of contamination exists.
- Face and hands shall be thoroughly washed upon leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities transpire.
- Legible and understandable precautionary labels shall be prominently affixed to containers of scrap, waste, debris, and contaminated clothing.
- Contaminated protective clothing shall not be removed from the controlled area until it has been cleaned or properly packaged and labeled.
- All wastes generated from the project activities (soiled PPE, decontamination waste, etc.) shall be contained and disposed as specified in the Waste Management Plan
- Facial hair which interferes with a satisfactory fit of the mask-to-face seal will not be permitted.

- Contact with potentially contaminated substances shall be avoided. Personnel shall not walk through puddles, pools, mud, kneel on the ground, lean or sit on equipment, or place monitoring equipment, or tools on contaminated surfaces.
- Personnel shall not be permitted to wear contact lenses within a controlled area.

#### **13.4 FORBIDDEN PRACTICES**

The following practices will be strictly forbidden during any work in controlled access areas:

- Horseplay
- Fighting
- Eating
- Drinking, except in authorized break areas
- Smoking
- Chewing gum, tobacco, or any other substances
- Use of facial ointment, other than prescription medication, sunscreen or preparations used on the advice of a physician.
- Applying facial cosmetics while onsite
- Unnecessary sitting or kneeling on contaminated surfaces.
- Placing equipment on contaminated surfaces (when practicable).
- Defacing, altering or removing manufacturers or project-provided labels as required by the Hazard Communication Program.
- Climbing on or over obstacles.
- Starting or maintaining an open flame of any type unless authorized by the SSHR
- Entering the work site with safety equipment that has not been determined to be in proper working condition immediately prior to entry.
- Entering the work site, under any circumstances, by any employee or visitor without prior approval.

*In addition to the forbidden practices, the SSHR may impose other prohibitions that may be required for safe operations.*

### **13.5 TRAFFIC**

The SSHR shall inspect each work site prior to the start of work and determine if traffic presents a potential hazard. Based on this inspection, the SSHR shall require the appropriate level of traffic safety procedures and equipment be employed, such as use of orange safety vests, traffic control cones or barricades, and use of traffic (warning) signs and flagmen.

### **13.6 WORK OVER OR NEAR WATER**

Work over or near water, where there is a potential for employees to fall in and the danger of drowning exists, will be conducted in accordance with the requirements of applicable OSHA standards and USACE EM 385-1-1. Work within 15 feet of unobstructed access to deep water shall be deemed to be within the requirements of this section. Except where employees are protected by continuous guardrails, safety belts, or nets, the following requirements shall be met by all personnel:

- Personnel will use the buddy system at all times.
- Swimming shall be prohibited for personnel, except for certified divers in the performance of their duties, unless necessary to prevent injury or loss of life.
- All personnel shall wear a Coast Guard-approved life vest of the type approved to support an unconscious person face up (Type 1 with 32-pound floatation).
- Ring buoys shall be available every 200 feet. Ring buoys shall be Coast Guard approved with 150 feet of 600-pound capacity line.
- A lifesaving boat shall be immediately available and ready for emergency use in accordance with applicable regulatory requirements. Lifesaving boats shall be supplied and equipped with the following:
  - oars and oarlocks suitably attached (except on inboard powered boats)
  - boathook
  - anchor
  - ringbuoy with 600 feet of line
  - two life preservers

Refer to EM-385-1-1 and the safety and health supplement for launch, motorboat, and skiff requirements.

Refer to USACE EM 385 1-1 and state or federal OSHA requirements for safety during diving operations.

### 13.7 FIRE SAFETY

All site personnel will comply with all fire-safety rules, for a complete list of fire-safety requirements, refer to Navy RAC SOP 2.1.24-A, "Fire Protection and Prevention," and SOP 2.1.24-B, "Hot Work Permits."

The following general fire-safety rules should be known and understood by all personnel on the project site:

- All personnel shall be informed of the location of the nearest fire alarm box and the local fire reporting telephone number.
- Smoking is permitted only in authorized and posted smoking areas.
- Strike-anywhere matches are prohibited on the site property.
- A permit is required prior to any hot work including, welding, cutting, grinding, or other spark producing activity.
- Each vehicle will carry a 3A:40B:40C type fire extinguisher.
- Laydown areas for materials will be approved before use.
- Approval to block roads, park heavy machinery or equipment, or set up drill rigs shall be obtained in advance.
- Oily rags shall be stored in closed metal containers approved for this purpose.
- Flammable and combustible liquids shall be handled only in approved safety cans.
- All personnel shall know the area escape route and alternate route.

### 13.8 ELECTRICAL CLEARANCE

Equipment shall be posted with signs warning the operator of the potential electrical hazard posed by overhead cables. If equipment is to be moved with the mast or other parts of the equipment near an overhead hazard, the operator shall determine that proper clearances can be maintained before moving the equipment. Clearance shall be monitored by a spotter.

The list below specifies minimum clearances to be maintained for energized overhead electric lines.

**Table 13-1 Minimum Clearance for Energized Overhead Electric Lines**

<u>Nominal System Clearance (feet)</u>	<u>Voltage (kilovolts)</u>	<u>Minimum Limits</u>
0	50	10
51	100	12
101	200	15
201	300	20
301	500	25
501	750	35
751	1000	45

### **13.9 INDUCED ELECTRICAL CURRENT**

When work may be conducted near electrical transmission towers, there is a potential for induced electrical charge to be present in equipment or materials such as pipe casing. The drilling Subcontractor shall take the following precautions to dissipate induced charges:

- All masts or booms shall be electrically grounded to the vehicle or base of the rig.
- The vehicle shall have a well-established ground.
- Crews shall ground metallic objects before handling, and they shall use insulated gloves.

### **13.10 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)**

Lockout/Tagout shall be performed when repairing equipment. Safety requirements shall meet U.S. Army Corps of Engineers Safety and Health Requirements EM 385-1-1 standards. Subcontractors without lock out/tag out procedures shall not repair equipment where release of kinetic or stored energy may cause injury.

### **13.11 MOVING EQUIPMENT**

Heavy equipment may be transported only if the following circumstances are satisfied:

- Movement is over smooth, level terrain.
- The path has been inspected for stability, and the absence of obstacle, ruts, or holes, and overhead electrical hazards.
- The travel distance is limited to short, safe distances.

The SSHR shall be the responsible individual to determine if mast-up travel may be permitted.



### **13.12 DRILLING EQUIPMENT SETUP AND OPERATION**

Earth drilling equipment setup and operation shall meet the following requirements in accordance with USACE EM 385 1-1:

- Rigs shall be operated only on stable ground and shall be maintained level.
- Rigs having outriggers shall use outriggers in accordance with manufacturers instructions.
- Rigs shall not be operated in confined spaces without authorization of the installation/activity safety coordinator and the SHM or SSHR.
- The SSHR shall monitor weather conditions. Operations shall be discontinued when electrical storms are occurring or imminent. The Subcontractor safety coordinator is responsible for determining when drilling operations shall cease.
- Earth drilling crew members shall not wear loose clothing or equipment. Protective outer clothing shall be taped to minimize the potential for catching in rotating machinery.
- Auger guides shall be used on hard surfaces.
- The rig operator shall verbally alert employees and visually assure that employees are clear of hazardous parts of the rig before starting or engaging the equipment.
- Water shall be channeled away from the work area to prevent ponding.
- Water containing potentially hazardous constituents shall not be permitted to run onto roadways, thoroughfares, or private property.
- Drill rods shall neither be run nor rotated through rod-slipping devices. No more than one foot of drill rod column shall be hoisted above the top of the drill rod mast.
- Drill rod tool joints shall not be tightened or loosened until the rod column is supported by a rod-slipping device.
- Augers shall be cleaned only when the auger is stopped and the power mechanism is in neutral.
- Only long-handled shovels shall be used to move cuttings from the auger.

### **13.13 DUST CONTROL**

All earth drilling shall be performed so as to minimize airborne dust. Dust shall be controlled to less than 0.5 milligrams per cubic meter of air (time-weighted average) as measured by a Miniram (or equal) at the controlled-area boundary.

### **13.14 SANITATION**

#### **13.14.1 Potable Water**

The SSHR shall assure that cool, bottled water is available at all remote sites. Bottled water shall be provided with a sanitary tap. Garden hoses are not an acceptable source of drinking water. Disposable cups shall be provided. Nonpotable water shall be marked "nonpotable, unfit for drinking, washing or cooking."

#### **13.14.2 Toilets**

Where employees do not have immediate access to available vehicles, temporary toilets shall be provided within a five-minute walk. During activities where provision of toilets is not practicable, such as reconnaissance or short-term mobile field activities, this requirement may be waived by the SSHR.

#### **13.14.3 Washing Facilities**

Washing facilities with running potable water shall be provided. Soap and disposable towels shall also be provided. Running water may be provided by either gravity flow, pressure, or manual pump.

### **13.15 WASTE DISPOSAL**

Waste receptacles shall be marked for their intended purpose and type of waste. All waste receptacles shall be fitted with a tight-fitting cover.

### **13.16 ILLUMINATION**

Illumination for night work shall meet OSHA standards.

### **13.17 HOUSEKEEPING**

The SSHR and PS shall inspect all work areas daily for adequate housekeeping; such inspection results shall be recorded on the SSHR's daily log. The following housekeeping requirements shall be met at all times:

- All passageways, and routes of access shall be kept clear of obstructions, cables or hoses at all times.
- Empty bags of loose dust producing material (cement, bentonite, lime, etc.) shall be removed daily.
- Combustible materials shall be properly stored.
- All spills of fuel, oil, solvents, or other flammable, dangerous or toxic material shall be cleaned up immediately and the spoils placed in containers marked as hazardous.
- Brush, long grass, or other materials that may present a fire hazard shall be cleared before motorized equipment will be used.
- Excess scrap material and rubbish shall be promptly removed from the work area.
- PPE shall be returned to the designated storage area at the end of the work period or shall be placed in designated disposal receptacles.

### 13.18 EXCAVATION SAFETY RULES

A partial list of excavation safety rules include Navy RAC SOP 2.1.17-C, "Excavation and Trenching," SOP 2.1.17-D, "Confined Space Entry," and SOP 2.1.17-A, "Utility Clearance." Applicable state requirements and USACE EM 385-1-1 shall also be consulted for full details.

The following specific requirements shall be followed for shallow excavations that personnel may enter:

- Entry is limited to excavations with a maximum depth of 5 feet at any point.
- All excavations should be inspected by the SSHR, PS, and the site engineer prior to entry; the SSHR shall determine that no potential for cave-in exists and that protective systems are not required for entry.
- A separate HWP shall be prepared for each excavation.
- Excavations that remain open shall be inspected daily by the SSHR and as needed following rain or other hazard increasing activity. Daily inspections shall be documented in writing.
- Spoils shall be kept at least two feet back from the edge of the pit.
- Stairs, ramps, or ladders shall be provided for pits greater than four feet in maximum depth.
- Excavations shall be backfilled immediately after completion of work.

- Perimeter protection shall consist of warning barricades or flagging at least six feet from the edge of the excavation at a height of three to four feet above ground. Standard exclusion zone barrier tape is acceptable provided entry signs indicate that excavation is in progress.
- Contact the SSHR for special protection requirements for excavations that must remain open overnight.

### **13.19 BURIED DRUM HANDLING PROCEDURE**

Refer to Section 28.H of USACE EM 385-1-1 for drum handling procedures. A special procedure shall be prepared if drums are onsite and sampling, handling, or inspection is required.

## **14.0 VISITOR ACCESS REQUIREMENTS**

### **14.1 GENERAL**

Site visitors are defined as those:

- Who are not employed at the project site
- Who do not enter restricted work areas
- Whose presence is of short duration (i.e., one to two days per month)
- Specialized technical personnel whose core business is not hazardous waste, but their expertise is required on short notice for brief periods.

Since visitors will not spend time in a restricted work areas, they are not required to meet all requirements of this plan. These visitors may include Program personnel, Navy Personnel, commercial vendors, representatives of political subdivisions, and auditors or inspectors from local, state, or federal agencies.

### **14.2 GENERAL REQUIREMENTS**

The following requirements apply to visitors whose purpose is to observe site conditions or field activities:

- The SSHR will be notified of the nature and duration of the visit.
- The visitor's log will be completed, including the individual's name, the date, and the name of the company or agency represented.

- The site visitor will be escorted by a Program representative as necessary.
- Visitors will comply with TSSHP Addendum determined by the SSHR.

#### 14.3 MEDICAL SURVEILLANCE

Each visitor will be required to undergo an occupational health assessment examination and show proof of an annual medical examination if the visitor requests access into a restricted work area *unless specifically exempted by the SHM*. A visitor who cannot provide a physician's statement or other acceptable documentation stating that he/she is physiologically qualified to work with hazardous materials and to wear a negative-pressure respirator (if such use is required) will be restricted from entry where exposure is possible. Any special tests identified in the TSSHP Addendum shall be administered to visitors if requested to enter a restricted area.

#### 14.4 TRAINING REQUIREMENTS

All visitors, even if escorted, must be briefed on the task-specific safety and health plan (e.g., potential hazards and safety procedures) before entering restricted work areas. Visitors will not be permitted into restricted work areas unless they have been trained, medically approved, and respirator fit-tested, if respirators are required.

#### 14.5 SPECIFIC REQUIREMENTS FOR LOCAL, STATE, AND FEDERAL INSPECTORS

Local, state, and federal inspectors who will enter into a restricted area will meet the requirements for general visitors.

Additional requirements and special provisions are as follows:

- When required, inspectors will wear PPE provided by their respective organization. The inspectors will not be allowed to use their personally owned protective equipment.
- If special tests are required under the medical surveillance program, the inspector will be responsible for adhering to these requirements, and his agency will be responsible for the associated costs.
- Costs associated with respiratory quantitative fit-testing (when required) will be borne by the inspector's agency.
- Inspectors must provide written proof of their medical/training qualifications.

#### 14.6 NAVY VISITORS

Navy personnel shall provide a letter or identification card indicating they are current with respect to hazardous waste site access requirements, with indication of expiration date. This will

permit site access without the need for the SSHR to verify that the access requirements have been satisfied.

The SSHR shall presume that government emergency-response personnel are current with respect to qualifications and shall not delay their access. The SSHR shall treat non-emergency response Naval personnel as site visitors.

#### **15.0 PROGRAM EMERGENCY RESPONSE AND NOTIFICATION PLAN**

The Emergency Response and Notification Plan (ERNP) requirements for the Navy RAC bases is found in Attachment A, "Navy RAC Bases Emergency Response and Notification Plan," to this plan. This ERNP includes site-specific details for the Navy RAC bases.

#### **16.0 HURRICANE AND DESTRUCTIVE WEATHER RESPONSE PLAN**

The Hurricane Response Plan (HRP) requirements are found in Attachment B, "Navy RAC Bases Hurricane Response Plan." In the event of a hurricane or other destructive weather, the SSHR will coordinate activities with the ROICC. Attachment B is not applicable to all bases (i.e., MCLB Albany), therefore the TSSHP will state its applicability.

#### **17.0 SPILL PREVENTION AND CONTROL PLAN**

The Spill Prevention and Control Plan (SPCP) requirements are found in Attachment C, "Navy RAC bases Spill Prevention and Control Plan." The SPCP includes site-specific details for the Navy RAC bases.

**ATTACHMENT A**

**NAVY RAC PROJECT**

**NAVY RAC BASES EMERGENCY RESPONSE  
AND NOTIFICATION PLAN**

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## EMERGENCY RESPONSE AND NOTIFICATION

### 1.0 GENERAL

A variety of work-related emergencies (falls, chemical exposures, heat stress, cold stress, equipment failures, etc.) and site-related emergencies (fires, explosions, releases of vapors, chemical reaction, etc.) could occur at the Navy RAC Bases. Critical situations include:

- Occupational
  - personal injury or fatality
  - property damage
  - environmental release
  - personnel exposure
  - fire
  - unplanned water discharge
  - hazardous substance spills
  - reaction to poisonous plants or animals or animal bites
- Natural Phenomena
  - earthquake
  - tornado/hurricane/tropical storm
  - snow, ice, and wind
- Other Critical Conditions
  - threats and civil disorders
  - sabotage/intrusion
  - kidnapping/extortion
  - unauthorized entry, vandalism, or theft

Generic emergency response and notification procedures will comply with guidelines established in this Plan for all Navy RAC Bases.

Where applicable, all onsite emergency response activities will be coordinated with Navy Project management. The SSHP shall adhere to applicable portions of the Navy's contingency planning for Navy RAC Bases.

This ERNP addresses the full spectrum of emergency contingencies. The plan is written as a "stand alone" document for distribution to various emergency response agencies and organizations.

## **2.0 RESPONSIBILITIES**

The PS or designee shall supervise emergency response activities by BEI and BEI Subcontractor personnel and, as the Emergency Response Team (ERT) leader, shall have decision-making authority. Other responsibilities of the PS include:

- Specifying a designee during his/her absence.
- Contacting local civilian emergency assistance personnel.
- Contacting local Naval facility emergency response personnel as needed, and Navy Resident Officer in Charge of Construction (ROICC) when directed to do so by BEI Navy RAC Project management.
- Contacting PM or designee if absent.
- Acting as a BEI contact for offsite responders.
- Obtaining equipment and supplies as needed.
- Resolving safety and health problems, with assistance from the SSHR.
- Requesting assistance from the BEI Navy RAC Program Management, as necessary.
- Immediately determining the character, source, amount, and extent of any release of hazardous substances.
- Assessing the possible hazards to nearby people and the environment.
- Enacting procedures to limit damage.

The SSHR shall be trained in emergency response procedures and ensure that all personnel are prepared to act if an accident occurs. The SSHR is also responsible for maintaining contact with Navy RAC Bases and offsite responders and providing them with hazard information about the site. Emergency response duties of the SSHR include:

- Preparing for and overseeing any emergency evacuation of the site.
- Ensuring that emergency response equipment and materials are maintained on-site.

- Working with BEI subcontractor onsite supervisors to assign qualified personnel to an ERT, which will respond to any onsite emergencies (the Navy RAC SHM shall provide technical direction to the ERT as needed).
- Ensuring that all personnel are familiar with procedures for communicating with local emergency services, Navy representatives, and project administrators.
- Maintaining a logbook of all onsite emergency incidents and transmitting appropriate documentation of each to Program management.
- Investigating all onsite emergency incidents and aiding in subsequent investigations by BEI or Navy Program Management.
- Informing all local emergency assistance personnel, including Navy RAC bases security, fire, and EMS representatives of major activities scheduled for the site and forwarding to them copies of this ERNP.
- Giving local emergency assistance personnel tours of the site.

The BEI Subcontractor site supervisors shall be indoctrinated by the SSHR in emergency response procedures and in the hazards associated with onsite hazardous materials and conditions. Emergency response duties of the Subcontractor site supervisors include:

- Assessing any potential hazard to employees or to offsite responders and reporting these to the PS or SSHR.
- Providing information about site-specific hazards and the nature of any onsite emergencies to Subcontractor personnel under their supervision.

### 3.0 EMERGENCY RECOGNITION & PREVENTION

The site PS shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous wastes at Navy RAC Bases. These measures shall include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

The hazards analysis contained in each SSHP identifies known and potential hazards. Efforts to reduce the effects of these hazards through engineering controls and safeguards shall be implemented to prevent emergency situations from arising. However, no plan can anticipate every conceivable hazard and natural occurrence.

Personnel shall be trained in the recognition of emergency signals (i.e., hand signals) and shall receive periodic reminders of required preventative measures.

Emergency recognition is designed to alert workers to the obvious and the not so obvious indicators. Indicators which workers will be trained to recognize shall include but not be limited to the following:

- Obvious indicators:
  - fire and smoke
  - alarms
  - apparent spills/leaks/releases of hazardous substances
  - explosion or violent chemical reactions
  - unusual odors
  - tornados and severe wind storms
  - hurricanes/tropical storms
- Not-so-obvious indicators:
  - personnel becoming disoriented
  - vomiting and nausea
  - distorted vision
  - apathy

Proper use of personnel protective equipment, adherence to work controlling documents and the SSHP, and good encouragement of personal care of one's self are the best measures for preventing an emergency situation to arise. Constant awareness of the work environment will allow early detection of an emergency situation and may lead to either prevention or minimization of the emergency condition.

The SSHR shall perform documented weekly inspections to identify and assure correction of conditions which may develop into an emergency situation. All BEI and BEI subcontractor personnel onsite shall be required to attend a weekly safety meeting. During these meetings the SSHR shall provide instruction in hazard recognition and shall strongly encourage site personnel to report any conditions or activities they have observed and that they feel are hazardous or may evolve into an emergency situation.

#### 4.0 EMERGENCY PREPAREDNESS

Preparing for emergencies shall include maintaining appropriate emergency response equipment onsite, providing emergency response training to onsite personnel and emergency response organizations, and rehearsing emergency response procedures. Table 1 provides a list of

recommended emergency response equipment. The SSHR will add additional, task-specific items which he/she feels are appropriate. Equipment designated for emergency use shall be used for no other purpose.

All site personnel, whether directly involved in emergency responses or not, shall be made aware of their responsibilities in an emergency. Site personnel appointed to the ERT shall receive special training in the emergency response procedures they required to perform. This training may be included in the initial site-specific training provided prior to commencing work.

Training shall also include rehearsal of emergency response actions. This training will be coordinated with local or Navy RAC Bases emergency response personnel and local emergency response commissions and coordinators, and will incorporate actual emergency scenarios which personnel shall respond to.

## 5.0 OCCUPATIONAL INJURIES AND MEDICAL EMERGENCIES

In accordance with 29 CFR Part 1926.50, "Medical Services and First Aid," at least one person onsite shall have either a valid certificate in first-aid/CPR training from the American Red Cross, or equivalent documented training. First-aid kits, stretchers, and other medical emergency supplies shall be maintained on site. Personnel whom the SSHR has determined to be qualified may use the kits to administer first aid to workers who are not seriously injured.

When responding to medical emergencies at the site, the ERT leader shall contact appropriate authorities (e.g., the facility fire department, a doctor, paramedics, Navy RAC Bases security or police). Information about local emergency assistance services are contained in the SSHP. Emergency telephone numbers shall be posted at each site telephone.

Entrance and exit procedures for controlled areas are not required for emergency response personnel when there are not conditions which are immediately dangerous to life or health (IDLH) present. Medical need takes precedence over contamination control requirements. Any spread of contamination shall be monitored for and contained after the incident.

Severely injured personnel shall be transported to a nearby medical center by ambulance. Site personnel will transport such persons to the hospital only if an ambulance service is not available to do so. A map delineating the most direct route and alternate route to the hospital(s) designated to provide emergency services shall be developed by the SSHR during mobilization and posted appropriately onsite.

All injuries shall be reported to the PS, SSHR, the responsible Subcontractor site supervisor, and the PM. The SSHR, or designee, shall be responsible for recording all injuries in the site's First Aid Log.

The first responsibility for anyone who identifies a personnel injury is to call for help and notify the SSHR and/or the PS:

**Table 1**  
**Recommended Emergency Response and Spill Supplies and Equipment**  
**to Be Maintained at Navy RAC Bases**

<b>PPE and Other Equipment</b>	<b>Medical Equipment</b>	<b>Hazard and Spill Mitigation</b>
Coated Tyvek Coveralls (4 each)	First aid kit and first aid manuals	Dustpans and dustbrooms
Full face negative pressure respirators (2 each)	Emergency eyewash apparatus	Street brooms
GMC-H Respirator canisters (4 each)	Stretchers	Coal shovels
Plastic shoe cover or rubber boots (4 pairs)	Blankets	55 gallon drums
Vinyl examination or surgical gloves (4 pairs)	Ice	Caution Ribbon
Outer rubber work chemical impervious work gloves (4 pairs)	Water in portable containers	10 mil plastic trash bags (10 each)
Face shields (2 each)	Mild decontamination solution (premixed soap and water)	Line Markers
Duct tape (1 roll)	Sunburn protectant	Lime
2-way radios and field telephones	Insect repellent	12 in. x 12 in. plastic bags (100 each)
		4 mil 12 ft x 100 ft plastic sheeting (3 rolls)
		Orange traffic cones
		Absorbent material
		20 lb ABC fire extinguisher (1 each)
		Booms or other spill control devices

- If the injury can be treated onsite, request the SSHR to provide assistance of an individual who is CPR/First Aid trained.
- If the injury requires offsite help, the PS, or designee, shall call for an ambulance and notify them of the victim's potential contamination.
- The PS or SSHR shall assign someone be sent to meet the ambulance and direct responders to the victim's location, inform them as to the victim's condition, and inform them of potential contamination.
- If transport to the hospital is expected, the PS, or designee, shall call the hospital and inform them of the victim's injuries and potential contamination. MSDSs for the chemicals shall accompany the victim to the hospital.
- If the victim is ambulatory according to the CPR/First Aid trained individual, he/she may be removed from a contamination area. Exit monitoring procedures from a controlled area are not required.
- If the victim is in a contaminated area and is not ambulatory, and time permits, a clean path to the victim should be created for offsite responders, if practical, by placing clean materials to walk on. Entrance and exit procedures are not required for emergency response personnel.

## 6.0 FIRE AND EXPLOSIONS

Supervisors shall maintain constant awareness of potential fire hazards. During general training, all personnel shall be trained to use extinguishers to quench small fires. The locations of fire fighting equipment shall be indicated in a Site-Specific Emergency Equipment and Maintenance Map to be generated by the SSHR during mobilization and posted in the site office. If personnel cannot extinguish a fire, however, they shall evacuate the area immediately and notify the Naval facility fire department. The SSHP shall determine whether facility fire alarm systems are present and how they will be used.

The PS, or designee, shall act as liaison with fire department personnel when they arrive and shall provide to them all pertinent information, including potential hazards, missing personnel and their last known locations, and the location and description of the fire. The PS shall also provide the fire department personnel assistance and resources within his command.

The first responsibility of anyone identifying a fire is to call for help and/or initiate a fire alarm.

If the fire is still small enough to handle with a portable fire extinguisher:

- If in a building, locate the nearest exit for a potential escape.

- Get the nearest portable fire extinguisher.
- Ensure that the type of extinguisher is appropriate for the type of fire.
- Empty the extinguisher toward the base of the fire, in a sweeping motion.

If the fire continues to grow and cannot be put out with one portable extinguisher:

- Evacuate the area.

The individual discovering a large fire shall undertake the following steps:

- If in a building, alert all others to the presence of fire.
- Do not attempt to fight the fire, but evacuate to a safe area and contact the facility fire brigade, PS, and SSHR.
- If the fire is in a controlled area, wait at a safe, nearby location for the arrival of firefighters and other emergency response personnel and provide guidance as to the radiological and/or chemical and/or physical hazards present. Stay at the fire site until arrival of the PS or SSHR.

The individual who observes an explosion shall:

- Attempt to observe if there are injured persons and whether a fire has resulted.
- Make no attempt to assist an injured person to evacuate unless it is known that there is no probability of additional explosions and existing environmental conditions do not present a situation which is IDLH.
- Evacuate and contact the facility fire brigade, PS and SSHR. Remain at a safe, nearby location to provide emergency response personnel with the location of injured personnel and guidance regarding radiological, chemical, and physical hazards at the explosion site. Stay at this site until the arrival of the PS or SSHR.

## 7.0 EMERGENCY EMISSION RESPONSE

The emergency emission response procedures described below shall be implemented whenever any of the following criteria is met:

- Flammable gases and vapors exceed 10 percent of the LEL within 20 ft of a military, commercial, or residential facility.



- Toxic gases such as hydrogen sulfide or hydrogen cyanide exceed 50 percent of the ambient air standard within 20 ft of a military, commercial, or residential facility.
- Unknown gases or vapors exceed 5 ppm above background at 300 ft from a military, commercial, or residential facility.
- Unknown gases or vapors exceed 1 ppm within 20 ft of a military, commercial, or residential facility.
- Known contaminants not listed in 40 CFR Part 50 exceed 1/50 of the OSHA PEL within 20 ft of a military, commercial, or residential facility.

Upon activation of the emergency emission response plan, the following activities shall be undertaken:

- Naval/Marine base security department shall be immediately notified.
- Local police authorities shall immediately be contacted if the release may effect commercial or residential facilities and advised of the situation.
- Evacuation of personnel shall be conducted at all areas adjacent to and within the contaminated zone as defined above.
- Frequent air monitoring shall be conducted at 30-min intervals within the 20-ft zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the SSHR.

## 8.0 EMERGENCY RESCUE

The "buddy" system shall be used at all times to ensure the need for rescue is identified as soon as possible.

Entry into potential IDLH conditions to perform a rescue shall only be undertaken by trained, professional emergency rescue responders. All entrants of confined spaces shall wear safety harnesses tethered to a life line and hoist. Rescue from a confined space shall be made by hoisting the victim out of the space.

Workers in a controlled area may undertake the rescue of a fellow worker, provided they do not place their own safety and health in jeopardy.

## 9.0 SPILLS OF HAZARDOUS SUBSTANCES

Radionuclides and chemicals could be spilled during site tasks as a result of:

- Transportation accidents
- Improper packaging practices
- Failure of packaging
- Handling accidents during storage, use, or waste disposal

Procedures to be followed in the event of a spill or release of hazardous materials are contained in the Navy RAC Bases Spill Control Plan, Attachment B to the SSHP.

A hazardous inventory listing shall be posted at the site office.

A list of recommended spill equipment to be maintained onsite is included in the list of general emergency equipment listed in Table 1 of this Plan. The storage location(s) for emergency spill equipment shall be indicated on the Emergency Equipment List posted in the site office.

#### 10.0 PERSONNEL EVACUATION AND ACCOUNTABILITY

Task-specific evacuation procedures shall be specified by the SSHR prior to work. These procedures shall specify evacuation signals, escape routes, and assembly points.

Any condition which may require evacuation shall be reported immediately to the SSHR, PS, or their designees. The SSHR, PS, or designee shall initiate all emergency evacuations. When in a building, personnel shall immediately evacuate for any fire alarm. The evacuation shall remain in effect until normal working conditions have been restored and permission to return to work has been granted by SSHR.

All personnel shall be directed to remain calm and follow prescribed routes to the predetermined assembly point. If time permits, when the evacuation signal is issued, all equipment in use shall be shut down. Personnel shall remain at the assembly point until personnel accountability is complete.

Maps shall be generated onsite by the SSHR and conspicuously posted in the onsite administrative office which shall depict emergency exits, evacuation routes from different areas of the site, and locations of fire extinguishers and fire alarms (if present). These maps shall be brought to the attention of all personnel. Personnel who cannot reach the common location shall report their individual locations to the PS, or SSHR, as soon as possible.

Should an evacuation be required while an airborne hazard exists, evacuation routes shall be upwind of any hazard. A windsock shall be maintained onsite at all times to indicate wind direction.

Once the evacuation is complete, the PS shall notify the appropriate Naval facility emergency response personnel and BEI PM of the event.

The SSHR or PS shall determine that all BEI personnel, visitors, and subcontractor site supervisors are present at the assembly point. Each subcontractor site supervisor shall determine if any of their personnel are missing. The SSHR shall use access logs to determine if any visitors are onsite and determine if any are missing.

If any personnel are missing, the PS or SSHR shall immediately notify emergency rescue personnel.

Specific evacuation routes from outdoor site locations shall be established before work begins and shall be shown on the site status map posted inside the BEI onsite office and communicated to all affected employees. All personnel shall meet at the assembly point unless otherwise directed by the SSHR or PS. The SSHR shall determine when workers may safely re-enter the evacuated area.

Before work begins in a building, escape routes from the building shall be established by the SSHR, indicated on site maps, and communicated to affected personnel.

If a building must be evacuated, affected personnel shall assemble at an assembly point predetermined by the SSHR. The SSHR shall determine when workers may safely re-enter evacuated buildings.

## 11.0 NOTIFICATION

When any employee discovers a situation that is not within normal operating conditions, then he/she should immediately notify their supervisor. Supervisors should, in turn, notify the PS and SSHR. The PS will then activate the ERT. The PS or designee shall then notify the PM. If the PM is unavailable the PS shall attempt to contact the PM. If Program management cannot be contacted, the PS shall contact the Navy Project Management listed in the SSHP.

The PM or designee shall make the determination whether the occurrence is significant enough to require reporting to EPA, OSHA, Navy project management and facility emergency response personnel, local emergency response coordinators, or BEI management. Contact telephone numbers for the project managers, senior Navy RAC BEI staff, and Naval Navy RAC staff shall be updated as needed by the safety and health staff and shall be posted at the site. These numbers shall also include home telephone numbers and beeper numbers.

Occurrences which would require notification of Project management:

- Any request for assistance issued to an offsite emergency service.

- Any onsite injury or illness as a result of which a BEI or BEI Subcontractor employee loses one or more days of work.
- Any accidental release of radioactive or hazardous materials offsite.
- Any spill of a hazardous material onsite that may exceed a reportable quantity.
- Apparent loss or theft of radioactive or other hazardous material.
- Any occurrence that garners attention by the public or press or Naval Marine officials.
- Any traffic accident which results in a loss of radioactive or hazardous material or violation or regulatory requirements.
- Discovery of contamination on the exterior of a container during transport.
- Damage to any container of radioactive or hazardous material during shipping and handling that may result in leakage.
- Estimated loss or damage to BEI or Naval property amounting to more than \$500.

A detailed investigation of emergencies shall be conducted jointly by the PS and the SSHR.

## **12.0 CRITIQUE AND FOLLOWUP**

Following each emergency response, the SSHR shall perform and document the following:

- A thorough review shall be undertaken of the events leading up to the emergency and the actions taken during the emergency. The causes shall be identified and changes made to the PSHP, SSHP, or other work controlling documents, which shall prevent or mitigate a similar future emergency situation.
- Contact with each supporting agency shall be made to determine what worked, what did not work, and what needs to be changed.

The information obtained from the SSHR's review shall be used by Project management to develop and present a documented lessons learned session to be attended by Navy RAC Project Management and senior personnel. The purpose of the lessons learned session is to revise procedures to prevent recurrence of the emergency situation or improve BEI's response to emergencies.

### **13.0 EMERGENCY ASSISTANCE SERVICES**

Emergency assistance organizations nearest to the site are listed at the end of this plan. Prior to site activities, the SSHR will meet with the local emergency responders (e.g., fire department, police, EMS) to discuss the work, chemical and other hazards present, etc. These meetings will be documented in letter form, sent to all participants, and kept onsite in BEI's home office. Annually thereafter, tours shall be provided to offsite emergency response organizations, to include the hospital, police, firefighters, and ambulance service. The SSHR shall use the annual tours to communicate with the responders to ensure they are capable and willing to respond to emergencies at the site.

The SSHR or PS shall document annual contacts in a thank you letter to the organization, copied to the BEI Navy RAC Project management. This letter shall document that a copy of the safety and health plan has been forwarded to local emergency assistance personnel and state any agreements or understandings with the organizations. This letter shall specifically state that the organization is able to respond to the site and for the organization to reply if any part of the letter is incorrect.

## EMERGENCY TELEPHONE NUMBERS FOR NS ATHENS

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE SECURITY .....	(706) 354-7305
NAVAL CLINIC INFORMATION .....	(706) 354-7321
ATHENS REGIONAL MEDICAL CENTER (PRIMARY MEDICAL PROVIDER) .....	(706) 549-9977
ST. MARY'S HOSPITAL (ALTERNATE MEDICAL PROVIDER) .....	(706) 548-7581

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w) (615) 481-0144 (h)
PROJECT MANAGER (BOB COHOSE) .....	(615) 220-2492
PROJECT SCIENTIST (STEWART TAYLOR) .....	(615) 220-2788
PROJECT SUPERINTENDENT (EDDIE NAJMOLA) .....	(615) 220-2128
NAVY ROICC (LT. JEFFERY LAMBERSON) .....	(706) 354-7250

### OTHER CONTACTS

GEORGIA POISON CONTROL CENTER .....	(404) 616-9000
NATIONAL RESPONSE .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE AND REMOVAL .....	(404) 347-3931
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

## HOSPITAL ROUTES

A description of routes to the above listed hospitals will be provided and posted onsite by the SSHR during site mobilization.

## EMERGENCY TELEPHONE NUMBERS FOR MCLB ALBANY

### EMERGENCY SERVICES

POLICE DEPARTMENT ..... 911  
 RESCUE SERVICE ..... 911  
 BASE RESCUE ..... (912) 439-5911  
 BASE FIRE DEPARTMENT ..... (912) 439-5911  
 PALMYRA MEDICAL CENTER (PRIMARY MEDICAL PROVIDER) ..... (912) 434-2000  
 PHOEBE PUTNEY MEMORIAL HOSPITAL  
 (ALTERNATE MEDICAL PROVIDER) ..... (912) 889-4152

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) ..... (615) 220-2344 (w)  
 (615) 481-0144 (h)  
 PROJECT MANAGER (BOB COHOSE) ..... (615) 220-2492  
 PROJECT SCIENTIST (STEWART TAYLOR) ..... (615) 220-2788  
 PROJECT SUPERINTENDENT (EDDIE NAJMOLA) ..... (615) 220-2128  
 NAVY ROICC (DAVID G. RINGHOLZ) ..... (912) 439-5960

### OTHER CONTACTS

GEORGIA POISON CONTROL CENTER ..... (404) 616-9000  
 (800) 282-5846  
 NATIONAL POISON CONTROL CENTER ..... (404) 639-3534  
 (800) 492-2414  
 ALBANY POISON CONTROL CENTER (EMERGENCY ROOM) ..... (912) 889-4150  
 NATIONAL RESPONSE CENTER ..... (800) 424-8802  
 REGIONAL USEPA EMERGENCY RESPONSE AND REMOVAL ..... (404) 347-3931  
 CHEMICAL REFERRAL CENTER ..... (800) 262-8200

### HOSPITAL ROUTES

A description of routes to the above listed hospitals will be provided and posted onsite by the SSHR during site mobilization.

## EMERGENCY TELEPHONE NUMBER FOR NSY CHARLESTON

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE RESCUE .....	(803) 743-5444
BASE SECURITY .....	(803) 743-3807
BASE FIRE DEPARTMENT .....	(803) 743-5333
NAVAL HOSPITAL INFORMATION .....	(803) 743-7000
MEDICAL UNIVERSITY OF SOUTH CAROLINA (PRIMARY MEDICAL PROVIDERS) .....	(803) 792-2300
ROPER BERKELEY CENTER (PRIMARY MEDICAL PROVIDERS) .....	(800) 846-7707
TRIDENT REGIONAL HEALTH SYSTEM (PRIMARY MEDICAL PROVIDERS) .....	(803) 797-7000
EAST COOPER COMMUNITY HOSPITAL (PRIMARY MEDICAL PROVIDERS) .....	(803) 881-0100

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w) (615) 481-0144 (h)
PROJECT MANAGER (PAUL TOMICZEK) .....	(615) 220-2235
PROJECT SCIENTIST (ROBBIN MANNING) .....	(615) 220-2406
PROJECT SUPERINTENDENT (BILL HEVRDEYS) .....	(615) 220-2534
*NAVY ROICC (JIMMY ELMORE) .....	(803) 743-3630 EX. 3006

### OTHER CONTACTS

SOUTH CAROLINA POISON CONTROL CENTER .....	(800) 922-1117
NATIONAL RESPONSE CENTER .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE .....	(404) 347-3931
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

## HOSPITAL ROUTES

A description of routes to the hospitals listed above will be provided and posted onsite by the SSHR during site mobilization.

\*Until replacement is found.



## EMERGENCY TELEPHONE NUMBER FOR NWS CHARLESTON

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE RESCUE .....	(803) 764-7297/7981
BASE SECURITY .....	(803) 764-3807
BASE FIRE DEPARTMENT .....	(803) 764-7297/7981
NAVAL HOSPITAL INFORMATION .....	(803) 764-7000
MEDICAL UNIVERSITY OF SOUTH CAROLINA (PRIMARY MEDICAL PROVIDER) .....	(803) 792-2300
ROPER-BERKELEY CENTER (PRIMARY MEDICAL PROVIDER) .....	(800) 846-7707
TRIDENT REGIONAL HEALTH SYSTEM (PRIMARY MEDICAL PROVIDER) .....	(803) 797-7000
EAST COOPER COMMUNITY HOSPITAL (PRIMARY MEDICAL PROVIDERS) .....	(803) 881-0100

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w) (615) 481-0144 (h)
PROJECT MANAGER (PAUL TOMICZEK) .....	(615) 220-2235
PROJECT SCIENTIST (ROBBIN MANNING) .....	(615) 220-2406
PROJECT SUPERINTENDENT (BILL HEVRDEYS) .....	(615) 220-2534
*NAVY ROICC (JIMMY ELMORE) .....	(803) 743-3630 EX. 3006

### OTHER CONTACTS

SOUTH CAROLINA POISON CONTROL CENTER .....	(800) 922-1117
NATIONAL RESPONSE CENTER .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE .....	(404) 347-3931
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

## HOSPITAL ROUTES

A description of routes to the hospitals listed above will be provided and posted onsite by the SSHR during site mobilization.

\*Until replacement is found.

## EMERGENCY TELEPHONE NUMBERS FOR NAS JACKSONVILLE

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE RESCUE .....	(904) 772-2451
BASE SECURITY .....	(904) 772-2661
BASE FIRE DEPARTMENT .....	(904) 772-3333/2451
NAVAL HOSPITAL (INFORMATION) .....	(904) 777-7300
ORANGE PARK MEDICAL CENTER (PRIMARY MEDICAL PROVIDER) .	(904) 276-8500
ST. VINCENT'S HOSPITAL (ALTERNATE MEDICAL PROVIDER) .....	(904) 387-7395
RIVERSIDE HOSPITAL (ALTERNATE MEDICAL PROVIDER) .....	(904) 387-7070

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w) (615) 481-0144 (h)
PROJECT MANAGER (HERMAN BAUR) .....	(615) 220-2302
PROJECT SCIENTIST (LYNN SIMMS) .....	(615) 220-2450
SITE MANAGER (FRED SEALE) .....	(615) 220-2547
NAVY ROICC (CDR DENNIS WRIGHT) .....	(904) 772-5571

### OTHER CONTACTS

FLORIDA POISON CONTROL CENTER .....	(800) 282-3171
NATIONAL POISON CONTROL CENTER .....	(800) 492-2414
JACKSONVILLE POISON CONTROL CENTER .....	(904) 549-4480
NATIONAL RESPONSE CENTER .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE .....	(904) 488-0190
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

### HOSPITAL ROUTES

A description of routes to the hospital(s) listed above will be provided and posted onsite by the SSHR during site mobilization.

## EMERGENCY TELEPHONE NUMBERS FOR NAS KEY WEST

### EMERGENCY SERVICES

POLICE DEPARTMENT ..... 911  
RESCUE SERVICE ..... 911  
BASE POLICE ..... (305) 293-2114  
BASE FIRE DEPARTMENT ..... (305) 293-3333/2776  
LOWER FLORIDA KEYS HEALTH SYSTEM (PRIMARY MEDICAL  
PROVIDER) ..... (305) 294-5531  
BASE AMBULANCE BOCA CHICA (ALTERNATE MEDICAL PROVIDER) (305) 296-2337

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) ..... (615) 220-2344 (w)  
..... (615) 481-0144 (h)  
PROJECT MANAGER (MAC McNEIL) ..... (615) 220-2745  
PROJECT SCIENTIST (STEWART TAYLOR) ..... (615) 220-2788  
PROJECT SUPERINTENDENT (DAVE WATSON) ..... (615) 220-2373  
NAVY ROICC (LTC. JAMES G. CRUZ) ..... (305) 293-2069  
NAS KEY WEST NAVOSH (EDWARD DONOHUE) ..... (305) 293-2314

### OTHER CONTACTS

FLORIDA POISON CONTROL CENTER ..... (800) 282-3171  
NATIONAL RESPONSE CENTER ..... (800) 424-8802  
REGIONAL USEPA EMERGENCY RESPONSE ..... (800) 414-8802  
CHEMICAL REFERRAL CENTER ..... (800) 262-8200

## HOSPITAL ROUTES

A description of routes to the hospitals listed above will be provided and posted onsite by the SSHR during site mobilization.

## EMERGENCY TELEPHONE NUMBER FOR NS MAYPORT

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE RESCUE .....	(904) 270-5648
BASE SECURITY .....	(904) 270-5583
BASE FIRE DEPARTMENT .....	(904) 270-5334
NAVAL HOSPITAL INFORMATION .....	(904) 777-7300
ORANGE PARK MEDICAL CENTER (PRIMARY MEDICAL PROVIDER) .	(904) 276-8500
BAPTIST BEACHES HOSPITAL (ALTERNATE MEDICAL PROVIDER) . . .	(904) 247-2900
ST. VINCENT'S HOSPITAL (ALTERNATE MEDICAL PROVIDER) .....	(904) 387-7395
RIVERSIDE HOSPITAL (ALTERNATE MEDICAL PROVIDER) .....	(904) 387-7070

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w)
	(615) 481-0144 (h)
PROJECT MANAGER (HERMANN BAUER) .....	(615) 220-2302
PROJECT SCIENTIST (RUSS BARBER) .....	(615) 220-2203
PROJECT SUPERINTENDENT (BUTCH LAKE) .....	(615) 220-2321
NAVY ROICC (CDR DENNIS WRIGHT) .....	(904) 772-5571
NAVY AROICC (LT. PAUL TUZZOLO) .....	(904) 772-5571

### OTHER CONTACTS

FLORIDA POISON CONTROL CENTER .....	(800) 282-3171
JACKSONVILLE POISON CONTROL CENTER .....	(904) 549-4480
NATIONAL RESPONSE CENTER .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE .....	(800) 414-8802
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

## HOSPITAL ROUTES

A description of routes to the hospitals listed above will be provided and posted onsite by the SSHR during site mobilization.

## EMERGENCY TELEPHONE NUMBERS FOR NTC ORLANDO

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE RESCUE .....	(407) 646-4911
BASE SECURITY .....	(407) 646-4444
BASE FIRE DEPARTMENT .....	(407) 646-4333
NAVAL HOSPITAL INFORMATION .....	(407) 643-2456
WINTER PARK HOSPITAL (PRIMARY MEDICAL PROVIDER) .....	(407) 646-7000
ORLANDO REGIONAL MEDICAL CENTER (ALTERNATE MEDICAL PROVIDER) .....	(407) 841-5210

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w) (615) 481-0144 (h)
PROJECT MANAGER (MAC McNIEL) .....	(615) 220-2745
PROJECT SCIENTIST (STEWART TAYLOR) .....	(615) 220-2788
PROJECT SUPERINTENDENT (DAVE WATSON) .....	(615) 220-2373
NAVY ROICC (KURT MUSSER) .....	(407) 646-5345

### OTHER CONTACTS

FLORIDA POISON CONTROL CENTER .....	(800) 282-3171
ORLANDO POISON CONTROL CENTER .....	(407) 841-5222
NATIONAL RESPONSE CENTER .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE .....	(800) 414-8802
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

## HOSPITAL ROUTES

A description of routes to the hospitals listed above will be provided and posted onsite by the SSHR during site mobilization.

## EMERGENCY TELEPHONE NUMBER FOR CSS PANAMA CITY

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE RESCUE (SEE BAY MEDICAL CENTER)	
BASE SECURITY .....	(904) 234-4332
BASE FIRE DEPARTMENT .....	(904) 234-4333
NAVAL HOSPITAL INFORMATION (CLINIC) .....	(904) 234-4177
BAY MEDICAL CENTER (PRIMARY MEDICAL PROVIDER) .....	(904) 769-1511
AMBULATORY RESCUE .....	(904) 769-1638
HCA GULF COAST (ALTERNATE MEDICAL PROVIDER) .....	(904) 769-8341

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w) (615) 481-0144 (h)
PROJECT MANAGER (PAUL TOMICZEK) .....	(615) 220-2235
PROJECT SCIENTIST (STEVE COWAN) .....	(615) 576-0462
PROJECT SUPERINTENDENT (GAINES SMITH) .....	(615) 220-2531
NAVY ROICC (STEVE AZZINARI) .....	(904) 234-4011

### OTHER CONTACTS

FLORIDA POISON CONTROL CENTER .....	(800) 282-3171
NATIONAL RESPONSE CENTER .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE .....	(800) 414-8802
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

## HOSPITAL ROUTES

A description of routes to the hospitals listed above will be provided and posted onsite by the SSHR during site mobilization.

## EMERGENCY TELEPHONE NUMBER FOR NAS PENSACOLA

### EMERGENCY SERVICES

POLICE DEPARTMENT .....	911
RESCUE SERVICE .....	911
BASE RESCUE .....	(904) 452-4138
BASE SECURITY .....	(904) 452-2453
BASE FIRE DEPARTMENT .....	(904) 452-3333
NAVAL HOSPITAL INFORMATION .....	(904) 452-6731
BAPTIST MEDICAL CENTER (ALTERNATE MEDICAL PROVIDER) .....	(904) 434-4811
WEST FLORIDA MEDICAL CENTER (ALTERNATE MEDICAL PROVIDER) .....	(904) 494-4192
SACRED HEART HOSPITAL (PRIMARY MEDICAL PROVIDER) .....	(904) 474-7000

### EMERGENCY CONTACTS

PROJECT S&H MANAGER (MERVIN ATWOOD) .....	(615) 220-2344 (w) (615) 481-0144 (h)
PROJECT MANAGER (PAUL TOMICZEK) .....	(615) 220-2235
PROJECT SCIENTIST (STEVE COWAN) .....	(615) 576-0462
PROJECT SUPERINTENDENT (GAINES SMITH) .....	(615) 220-2531
NAVY ROICC (CAPTAIN JOE RICCIO) .....	(904) 452-4616

### OTHER CONTACTS

FLORIDA POISON CONTROL CENTER .....	(800) 282-3171
NATIONAL RESPONSE CENTER .....	(800) 424-8802
REGIONAL USEPA EMERGENCY RESPONSE .....	(800) 414-8802
CHEMICAL REFERRAL CENTER .....	(800) 262-8200

## HOSPITAL ROUTES

A description of routes to the hospitals listed above will be provided and posted onsite by the SSHR during site mobilization.

**ATTACHMENT B**

**NAVY RAC PROJECT**

**NAVY RAC HURRICANE**  
**and**  
**DESTRUCTIVE WEATHER RESPONSE PLAN**



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## HURRICANE AND DESTRUCTIVE WEATHER PLAN

### 1.0 GENERAL

Hurricanes and severe weather such as tropical storms can present an immediate danger to site personnel and equipment. Hazards include large waves and storm surges, flying debris, and destructive winds and lightening.

The PS and SSHR are responsible for preparing for hurricanes and severe weather, determining when severe weather is likely, and initiating the required level of response, including evacuation of project personnel from Navy RAC Bases to a safe refuge out of the storm's path.

The PS shall establish predetermined assembly points to meet at following evacuation. A sufficient number of assembly points shall be established so that a location out of the path of any hurricane can always be selected. Assembly points must be accessible by land or air travel and have sufficient motel/hotel accommodations to house Bechtel evacuees for the duration of the evacuation. Routes to these assembly points will be distributed to all Bechtel employees at the site.

The PS and SSHR shall familiarize themselves with the following definitions and conditions.

#### Definitions.

- a. Gale - winds 34 to 47 knots
- b. Storm - winds 48 to 63 knots
- c. Tropical depression - tropical cyclone with winds to 33 knots
- d. Tropical storm - tropical cyclone winds from 34 to 63 knots or higher
- e. Hurricane - tropical cyclone winds 64 knots or higher
- f. Tornado - violent rotating column of air, "funnel cloud," winds 100 to 250 knots
- g. Zulu time - Greenwich Mean Time (subtract 5 hours to establish Eastern Standard Time; 4 hours for Eastern Daylight Savings Time).

#### Conditions of Readiness.

- a. Major cyclonic storms (seasonal tropical storm/hurricane)

Condition FOUR	-	Destructive wind is expected within <u>72</u> hours.
Condition THREE	-	Destructive wind is expected within <u>48</u> hours.
Condition TWO	-	Destructive wind is expected within <u>24</u> hours.
Condition ONE	-	Destructive wind is expected within <u>72</u> hours.

- **LAYDOWN/STORAGE AREAS:** The jobsite and laydown, storage and work areas shall be maintained in a neat, orderly condition on a continuing basis and shall comply with the standards of cleanliness and appearance regulating the Station.
- **CLEANING UP:** At all times, keep the work area, including storage areas, free from accumulations of waste materials. Before completing the work, remove from the work and premises any rubbish, tools, scaffolding, equipment, and materials. Upon completing the work, leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer.

### 3.0 RESPONSE TO HURRICANE AND TROPICAL STORM CONDITIONS

The following hurricane or tropical storm condition and response actions should be used as guidelines by the PS in responding to the threat of a hurricane; however, the PS must be cautious, and if preparations for a hurricane or arrangements for evacuation are complex, then response actions should be undertaken before hurricane or tropical storms achieve the conditions associated specific response actions.

#### Condition 4

The path of a hurricane or tropical storm has been fairly well established and its trend indicates a possible arrival of destructive force winds (> 34 knots) and severe weather to the area within 72 hours.

#### Response:

- Notify project management of the potential storm threat to the site.
- Track storm and prepare for further response actions.
- Review emergency instructions and emergency contacts.

#### Condition 3

A storm or hurricane has assumed a definite pattern and arrival of destructive force winds is expected within 48 hours. The response items listed for Condition 4 have been completed.

#### Response:

- Notify project management that the storm is now expected.

- Release local hires to make hurricane preparations at home, if required.
- Move equipment to sheltered area (hanger), if available, or secure according to approved designs. Shutter or tape trailer windows.
- Clear job sites of all waste material that may become windborne, and to have trash and debris removed from the station.
- Have available on the job site sufficient hurricane gear such as ropes, tarpaulins, stakes, etc. to securely fasten all unfinished construction, stock piles of materials, tools and equipment.
- Confirm existing names, or obtain names, and telephone numbers of project personnel available on a 24 hour basis that the Resident Officer in Charge of Construction (ROICC) office and contact should the need arise to clean up and tie down work sites.
- Evacuate by motor vehicle in accordance with the evacuation procedures.

#### Condition 2

A tropical storm or hurricane has been definitely established and arrival of destructive force winds is expected within 24 hours.

The response items listed in Conditions 3 and 4 have been completed.

- Contractors shall make preparations to enable all construction work to be completely secured by a certain agreed time with the ROICC.
- All materials and equipment not immediately required for construction shall be removed or securely tied down.
- All openings shall be closed except those necessary to permit access to work presently underway.
- All trash and debris shall be removed.
- In Key West, personnel may have to be evacuated by air.

Condition 1

- Immediately use all personnel (personnel to be supplemented if required) to secure all materials and equipment that may become dispersed by high winds or high water. Lumber and materials to be piled in compact piles and tied securely by means of 2X4 stakes in the ground, a minimum of 30 inches, or metal screw anchors, and tied across with ropes.
- Buildings, structures or portions thereof shall be braced where necessary, openings closed; outside scaffolds disassembled and/or otherwise secured to the satisfaction of the ROICC or his designee.
- Advise the Command Hurricane Officer which site personnel were not able to evacuate, and have them report to an authorized hurricane shelter as directed.
- Remain within the shelter until the Command Hurricane Officer, or designee, advises that the storm has passed.

#### 4.0 EVACUATION PROCEDURES

Response items for each hurricane condition are recommendations: the exact sequence of response items shall be at the discretion of the PS based on the complexity of completing each item; therefore, the decision to evacuate the site shall be made specifically and independently of the hurricane and tropical storm condition in effect. The PS shall assess the ability of site personnel to complete response items and still be able to undergo a timely evacuation. In the lower Keys, early evacuation is extremely important because there is only one lane available for travel by motor vehicle.

In NAS Key West, local hire and subcontractor personnel shall evacuate under their own discretion and their own means.

Bechtel visitors or site personnel on temporary assignment shall be evacuated as a group, if possible, following the requirements of this section.

Motor vehicle evacuation shall include the following elements.

- To minimize storm damage to project motor vehicles, as many as possible will be used during evacuation (by vehicle) out of the path of the storm. This requirement is countermanded if roads are already congested and traffic control authorities request car pooling.

- Each driver will be given a map and oral directions to the assembly location where the storm will be waited out. The SSHR and PS shall confirm that each driver is certain of the directions to the assembly point.
- A head count will be taken to ensure that all Bechtel visitors and personnel are present. All will depart as a group, no personnel shall be left behind if at all possible.
- Every attempt should be made to keep vehicles in visual contact during travel to the assembly location.
- A head count will be performed at the assembly location.

If air travel is required, the PS will arrange for ticketing and coordinate travel from the airport to the assembly area. To facilitate accountability, every effort will be made to fly personnel as a group or within the shortest time frame possible.

The PS shall arrange for housing at the assembly location.

#### 5.0 REQUIREMENTS FOLLOWING A DESTRUCTIVE STORM

Upon return to the site following a destructive storm, the SSHR shall perform an inspection of all work areas determining if significant changes in site conditions have occurred. If such changes have been identified, the PS shall report these to project management and the SSHP, TSSHP, and other work controlling documents shall be revised to address the changes.

- The PS, with assistance from the SSHR, shall assess the amount of damage caused by the storm. Damage shall be reported in accordance with the requirements of Navy RAC SOP 2.1.100-A, "Incident, Illness, and Injury Reporting."

**ATTACHMENT C**

**NAVY RAC PROJECT**

**NAVY RAC BASES SPILL PREVENTION AND  
CONTROL PLAN**

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## **SPILL PREVENTION AND CONTROL PLAN**

### **1.0 INTRODUCTION**

The purpose of this Spill Prevention and Control Plan (SPCP) is to control and minimize the safety, health and environmental hazards due to spills of hazardous materials which are used or stored at the project site locations. All drummed material shall be stored in accordance with the Waste Management Plan. Spills that may occur include the following:

- Gasoline spills
- Oil spills
- Solvent spills
- Drum and/or tank spills of unknown contents
- Polychlorinated biphenyls (PCBs) spills
- Hazardous waste spills
- Airborne contamination from spills/leaks
- Contaminated water spills

These substances could be spilled or released during site activities as a result of:

- Transportation accidents
- Improper packaging practices
- Rupturing of tanks, drums, or other storage containers
- Improper handling of hazardous materials during loading and/or off-loading

### **2.0 PREVENTION**

It is the responsibility of the site safety and health representative (SSHR) and the Project Superintendent (PS), or designee, to identify potential hazardous material release situations. Typical warning signs include:

- Poor container conditions such as excessive rust, dents or puncture marks
- Non-segregated incompatible materials stored in the same area
- Material storage areas without berms or diking

- Containers stored near moving or vibrating equipment
- Containers lacking or having insecure lids
- Materials placed in inappropriate containers (i.e., corrosives in metal)
- Inappropriate materials handling/transferring operations
- Leaking equipment (i.e., oil pans, transmissions, hydraulic systems)

### 3.0 ASSESSMENT

Each hazardous spill shall be properly assessed in order to implement effective control procedures. This would include a materials characterization which includes the following information:

- Names/types of materials released
- Amount of materials released
- Location of the release
- Hazardous characteristics of the released substance(s)
- Occurrences due to spill (i.e., fire, injury, illnesses, damage to environment)

### 4.0 RESPONSE IMPLEMENTATION

#### 4.1 HAZARDOUS OR UNKNOWN SPILLS

The emergency response plan (refer to Attachment A) will be activated in the event of unplanned spills or releases of hazardous or unknown substances.

As soon as a spill is discovered, all nonessential workers shall evacuate the immediate area if the spill may pose a threat to the health and well being of personnel. This will help reduce the likelihood of spreading contamination outside the restricted area and minimizing the number of contaminated personnel.

While the evacuation is in progress, the PS or designee and SSHR shall be notified immediately by any project personnel who witnesses the emergency event.

Once at the site, the SSHR will designate the spill as a restricted area and only authorized personnel, such as the Hazardous Materials Spill Containment Team (HMSPCT) shall be permitted within the spill confines. HMSCT members are project personnel who have been trained to contain and cleanup spills from typical materials and quantities used on the project location. The HMSCT members will be designated during site mobilization (see page B-6).

The PS and/or the SSHR may setup physical barriers, warning unauthorized personnel to stay clear from the site, and provide technical guidance to the ERT as needed.

Once barriers have been established, the field team leader and SSHR will assess the spill conditions, as described in Section 3.0, and determine whether the spill is small or large.

#### **4.2 HANDLING SMALL SPILLS**

Small spills involve a maximum volume of 55 gallons of a liquid or 100 pounds of a solid, including contaminated soil. Small liquid spills may be remediated with absorbent materials. This task will be conducted by onsite workers, supervised by the SSHR and field team leader. The SSHR or designee shall direct spill response operations and stay at the spill area until the area has been cleaned, surveyed, and prepared for release. The PS shall be responsible for the approval of the release of the site, and will issue a final release report of the area.

#### **4.3 HANDLING LARGE SPILLS**

Large spills involve liquids greater than 55 gallons or solids greater than 100 pounds. Action plans for large spills need to be assessed quickly as the potential for catastrophic events (fires, injuries, illnesses) and extended contamination to the ground water, local rivers and streams and neighboring facilities exist. However, proper control procedures shall first be established and communicated to the ERT prior to any control activity. Should efforts by the ERT require additional support, the Naval On-Scene Commander (NOSC) shall be contacted to dispatch a hazardous materials (HAZMAT) team. The HMSCT will be designated for each site during mobilization (see Form B-6). Operations for the ERT shall then shift to the role of first responder, operations level (29 CFR 1910.120, paragraph q), whereby, responsibilities consist of containing the spill from spreading to outside areas and keeping unauthorized personnel from entering the restricted area. The actual spill containment and materials release termination shall be the responsibility of the Navy HAZMAT team or their designate.

The PS and the SSHR shall offer assistance to the Navy designate incident commander and shall stay at the spill area until asked to leave the area (by the HAZMAT incident commander) or until the area has been cleaned, surveyed, and prepared for release. Prior to the recommencement of project activities, the PS shall approve the release of the site and shall issue a final release report of the area.

### **5.0 CONTAINMENT EQUIPMENT**

The designated emergency response team shall proceed to the spill area with the appropriate equipment. Spill equipment may consist of but not be limited to any or all of the following:

- Absorbent
- Shovels
- Containers for material storage and disposal

- Non-corrosive pump
- Hose
- Warning tape or traffic cones
- 10 lb bag (minimum) or sorbent packs/pillows
- Polyethylene (non-sparking material)

## 6.0 PERSONNEL PROTECTIVE EQUIPMENT

The SSHR shall determine the appropriate PPE, including PPE during the initial ERT entry into the restricted area. Typical PPE for spill containment operations may include but not be limited to the following:

- Hard hat
- Safety goggles
- Rubber boots (at least knee length) with toe protection
- Chemical resistant inner and outer gloves
- Syranex/Tyvek coveralls with hood
- SCBA or full facepiece air purifying respirators with organic vapor/acid gas/HEPA cartridges

The SSHR shall assess that upgrading or downgrading of PPE is necessary. For timely response to spills which may require Level B protection, two SCBAs will be available onsite.

## 7.0 MONITORING

While the ERT is cleaning the spill, the SSHR shall monitor for chemical exposures. During the cleanup, direct reading instrumentation should be employed as practical. Typical instrumentation is photoionization detector (PID), flame ionization detector (FID), combustible gas indicators (CGIs) and colorimetric indicator tubes. Personal monitoring using sampling pumps and collection media, such as activated charcoal tubes, may also be employed, depending on the SSHR assessment.

## 8.0 NOTIFICATION

It is BEI's intention that hazardous material spills/releases be controlled by onsite personnel. However, should an incident involve a situation that represents potential life-threatening situations or damage to the environment, the PS will contact the Naval Resident Officer in charge of Construction (ROICC) for response support. It is the PS responsibility, supported by the SSHR,

to notify the ROICC and to relate pertinent information for response purposes. It may also be necessary to contact federal, state, or local agencies for compliance with environmental, and safety and health regulations. Agency notification shall be the responsibility of the project manager (PM), or the ROICC.

## 9.0 RECORDKEEPING

The SSHR and PS shall document the spill in an incident report in accordance with Bechtel Safety and Health Procedure 2.1.27, "Spill Control and Reporting." The incident report shall be forwarded to the BEI safety and health manager (SHM) and project manager. Records of all hazardous materials releases shall be maintained with the project files. Information shall include:

- Time and date of incident
- Location of incident
- Size of release
- Chemicals involved
- Names of SSHR and ERT
- Cleanup procedures
- Unusual or pertinent incidents during the cleanup
- Followup actions
- Notifications
- Support services required
- Safety hazards related to the spill

## HAZARDOUS MATERIALS SPILL CONTAINMENT TEAM

Project Name: NAVY RAC PROJECT

Project Site: Navy RAC Bases

Project Location: TBD

DO Number: TBD

Site Safety and Health Representative: TBD

Project Superintendent or Designee: TBD

### Emergency Response Team Members:

1. Project Superintendent - TBD

2. Field Engineer - TBD

3. Site Safety and Health Manager - TBD

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

**ATTACHMENT D**

**NAVY RAC PROJECT**

**NAVY RAC BASES SITE DESCRIPTIONS, LOCATIONS, AND HISTORY**

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## **SITE DESCRIPTIONS, LOCATIONS, AND HISTORY**

### **1.0 INTRODUCTION**

This section details the base location and provides a location map, a brief history of the base, and a description of the sites of contamination or potential sources of contamination (PSCs) at this time.

This section is for the delivery orders (DO) current at this time. It is anticipated that other bases or sites/PSCs will be added to the project. As DOs are received, base and site/PSC descriptions will be included in the TSSHP.

The following is a list of those bases with current DOs:

- Marine Corps Logistic Base (MCLB) Albany, Albany, GA.
- Naval Supply Core School (NSCS) Athens, Athens, GA.
- Naval Ship Yard (NSY) Charleston, Charleston, SC.
- Naval Weapons Station (NWS) Charleston, Charleston, SC.
- F-18 Crash Site.
- Naval Air Station (NAS) Key West, Key West, FL.
- Naval Air Station (NAS) Jacksonville, Jacksonville, FL.
- Naval Air Station (NAS) Cecil Field, Jacksonville, FL.
- Naval Training Center (NTC) Orlando, Orlando, FL.
- Naval Station (NS) Mayport, Jacksonville, FL.
- Coastal Systems Station (CSS) Panama, Panama City, FL.
- Naval Complex (NC) Pensacola, Pensacola, FL.

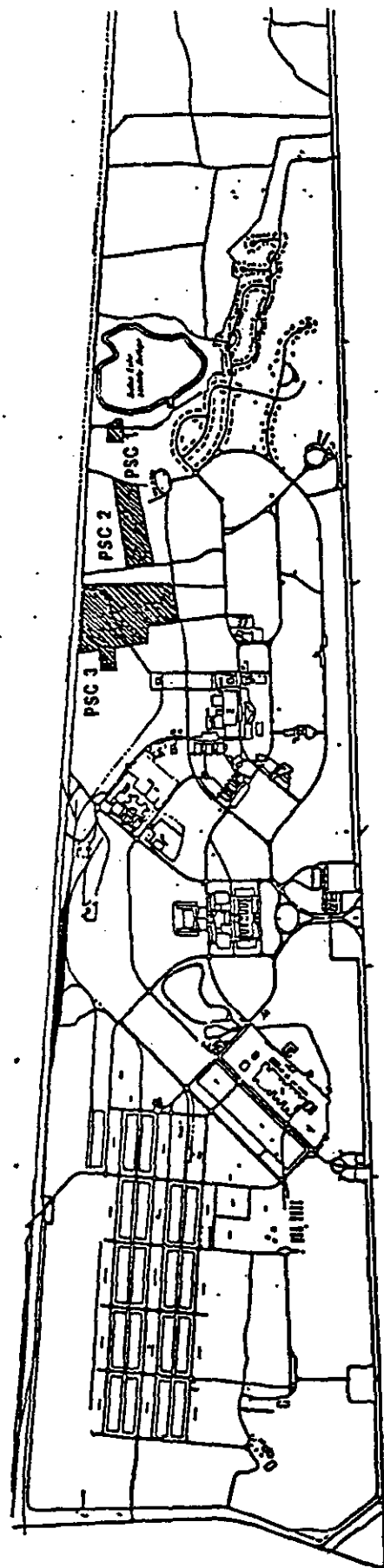
### **2.0 MCLB ALBANY, ALBANY, GEORGIA**

#### **2.1 BASE LOCATION**

MCLB Albany, Georgia is in Dougherty County, in the southwestern corner of the State of Georgia (Figure 1-1). The base occupies an area of approximately 3,579 acres situated about 5 miles east-southeast of the city of Albany.

The MCLB property land use and land cover classifications include residential; commercial and services; industrial; transportation, communications, and utilities; industrial complexes (warehouses and associated storage areas); orchards (pecan groves); mixed forest lands; and wetlands (forested and nonforested).

The primary purpose of MCLB Albany is to: (1) execute that phase of military logistics controlling the acquisition, availability, and disposal of material under its cognizance in sustaining the optimum degree of combat readiness of the Marine Corps forces world-wide; (2) exercise technical direction of the Marine Corps stores distribution system; (3) acquire, maintain, repair and rebuild, distribute, store, and issue supplies and equipment as assigned; (4) provide a central



1000 2000 FEET  
SCALE: 1" = 200'

001  
PSC 1 - East Disposal Area  
PSC 2 - West Disposal Area  
PSC 3 - Long-Term Landfill

Figure 1-1 Site Location Map  
MCLB Albany

logistics quality assurance program; (5) conduct formal schools and training as directed; and (6) perform such other tasks and functions as may be directed by the Commandant of the Marine Corps.

The land surrounding MCLB Albany property in southwestern Georgia is predominantly rural and agricultural. Industrial growth is steady in Dougherty County, but focused in the Albany area. Land bordering the MCLB to the south, east, and northeast is primarily agricultural or privately owned recreational open space. The land to the northwest and west of the base is dominated by residential and commercial areas of eastern Albany. An industrial part is located approximately 1 mile north of MCLB Albany, and other industrial facilities are located to the west of the base.

## 2.2 BASE HISTORY

MCLB Albany, as it is known today, was commissioned on March 1, 1952, as the Marine Corps Depot of Supplies under the command of Brigadier General R. P. Coffman, U.S. Marine Corps (USMC). Construction of the base continued until early 1954, when the facility was sufficiently complete to assume supply support for Marines east of the Rocky Mountains and in the Atlantic Ocean area. The facility was renamed Marine Corps Supply Center (MCSC) on July 29, 1954.

In 1967, inventory control and financial management functions were transferred to the Marine Corps Supply Activity (MCSA) in Philadelphia, Pennsylvania. At that time, MCSC Albany became a Storage Activity and Depot Maintenance Activity, with formal schools training in maintenance and supply activities. These schools continue as a function of the base today.

MCSC Albany was redesignated Marine Corps Logistics Support Base, Atlantic, on April 1, 1976. During 1976, inventory control, financial management, procurement, and technical support functions performed at MSCA Philadelphia were relocated to Albany. On November 1, 1978, the facility was renamed Marine Corps Logistics Base (MCLB), Albany. The full spectrum of logistics support functions required for the life cycle support of the Marine Corps Weapons Systems and Equipment is now performed at this base. Site description for PSC 1, 3, and 22 are covered under TSSHP Addendum 3.

A former landfill is located approximately 3 miles west of the MCLB property on the west bank of the Flint River. This facility was in operation from the early 1950s until the early 1980s. The current Dougherty County landfill, located approximately 1 mile south of MCLB Albany housing in an area between Fleming Road and Gaisert Road, has been in operation since 1982. Monitoring wells have been installed around the new landfill by the GEPA to monitor groundwater quality.



### 3.0 NSCS ATHENS

#### 3.1 SITE LOCATION

NSCS Athens, Georgia, (Figure 1-2) is on a 58.45 acre site in Clarke County. The school site is bounded by Prince Avenue, Oglethorpe Avenue, and Bowstrom Drive. The Naval Exchange (NEX) gas station, leaking underground storage tank site (LUST), is located near the far north corner of the parcel at the intersection of Prince Avenue and Bowstrom Drive. The facility is presently operating as a gas station and convenience store. No vehicle repair services are currently being conducted out of the service station.

Present usage of parcels north across Prince Ave. and west across Bowstrom consist of light commercial, apartments, rental homes, and residential. No other service station is in operation near the NEX site.

#### 3.2 SITE HISTORY AND DESCRIPTION

The service station maintained three 10,000 gallon underground storage tanks (USTs) containing premium unleaded and leaded gasoline. The USTs constructed of uncoated steel were installed in 1974. In 1987, NSCS Athens personnel suspected that the regular leaded gasoline and the premium unleaded gasoline USTs were leaking and tank tightness testing was performed and tanks were certified to be tight. During initial site assessment activities, the piping from the tanks to the dispenser on two of the tank systems was identified as leaking. Soil and groundwater contamination from petroleum hydrocarbons exist at the site near the UST locations. NSCS Athens personnel suspected that the regular leaded gasoline and the premium unleaded gasoline USTs were leaking.

The location of the remediation activities will be in a highly public area in the general vicinity of a service station, restaurant, school and residential buildings.

### 4.0 NAS CECIL FIELD

#### 4.1 BASE LOCATION

NAS Cecil Field is 14 miles southwest of Jacksonville, Florida in the northeastern part of Florida (Figure 1-3). Most of NAS Cecil Field is located within Duval County; however, part is located in the northern part of Clay County.

Surface waters drain westerly to a ditch that parallels Perimeter Road, easterly to Lake Fretwell, and southerly to a stream that runs along the southern border of the site. A small berm on the western and southern borders of the site may intercept such flow at the site and direct it easterly to Lake Fretwell. Shallow groundwater may also be intercepted by the stream, which ultimately discharges to Lake Fretwell approximately 900 feet to the east of the site.

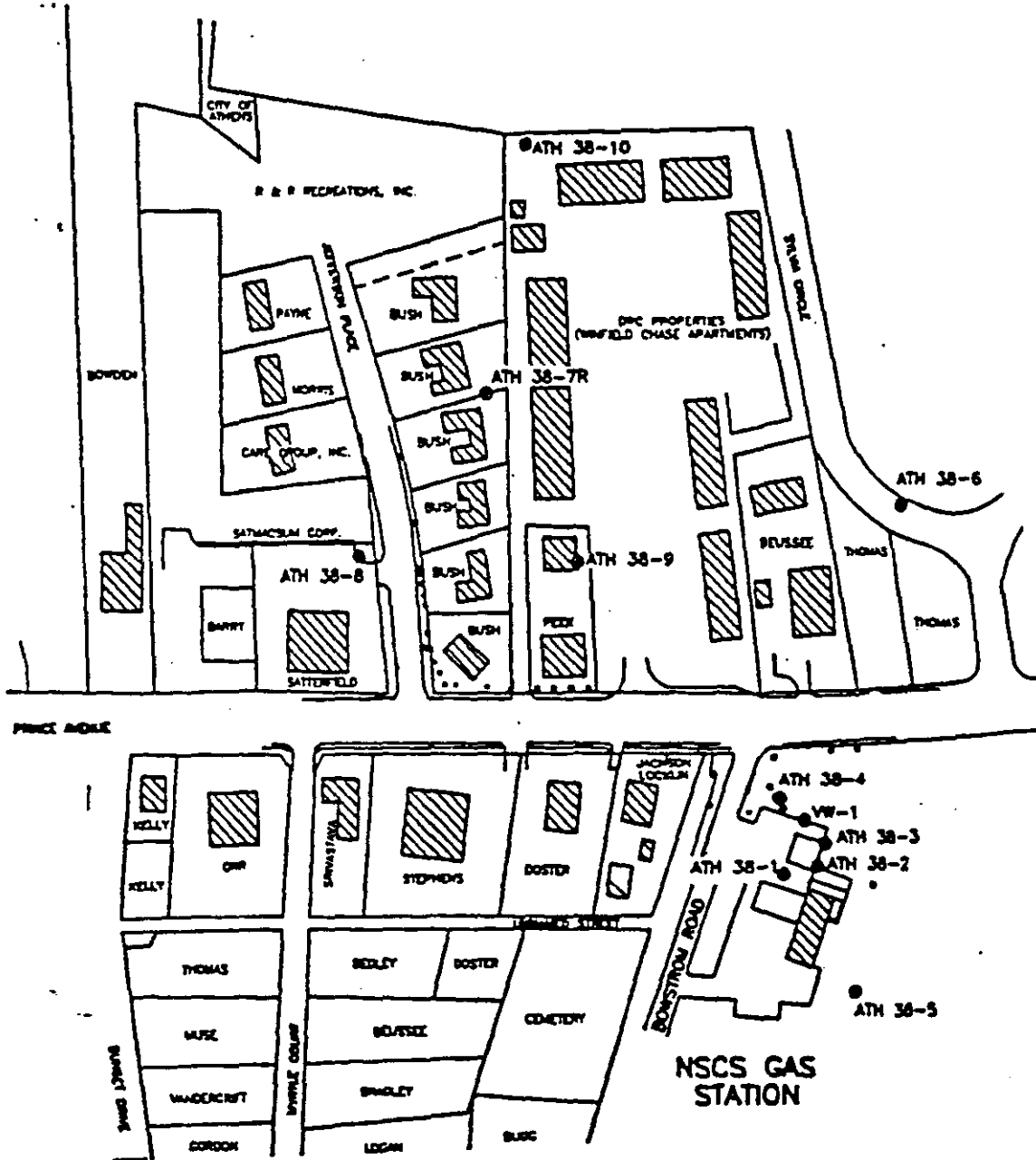


Figure 1-2 Site Location Map  
 NSCS Athens

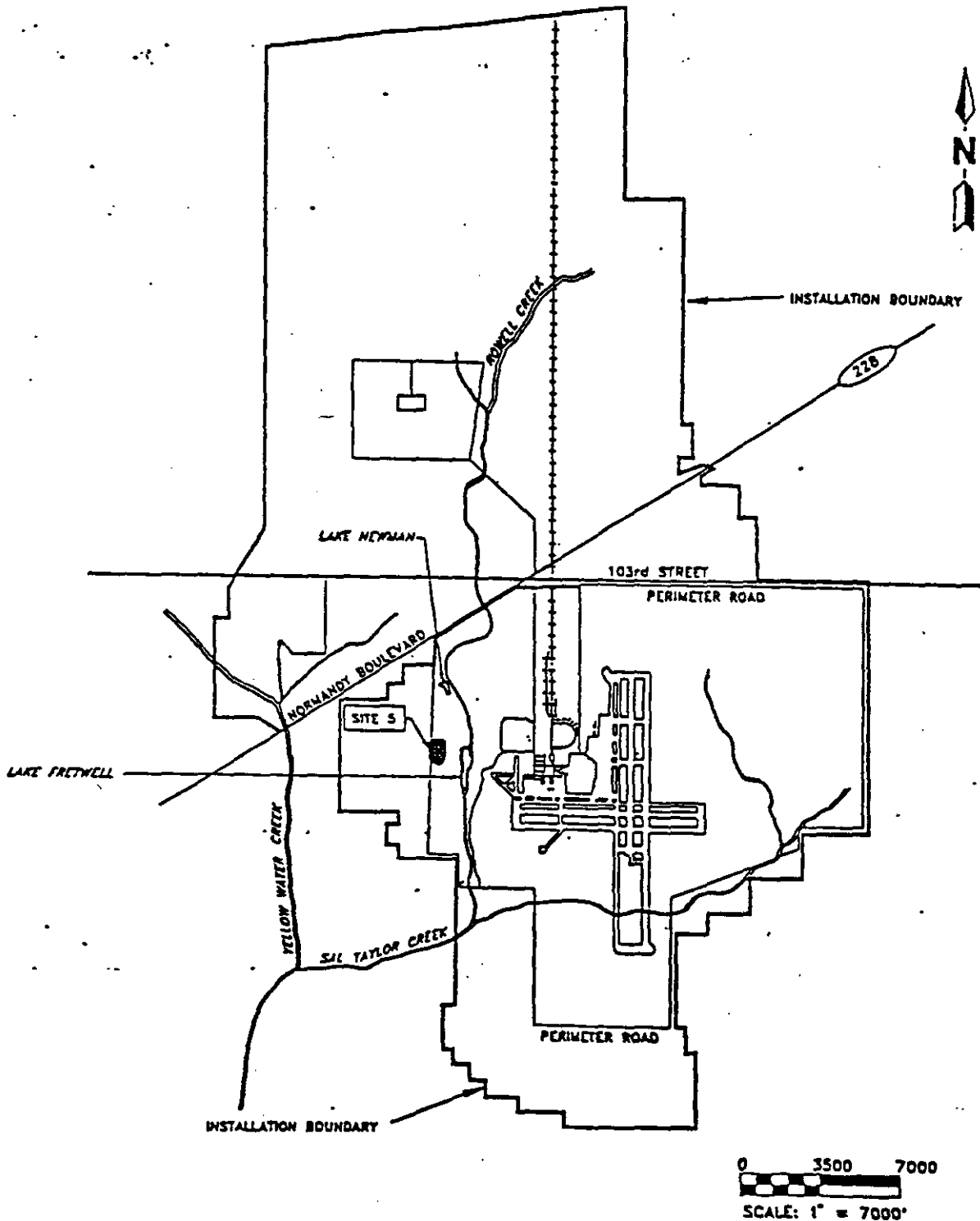


Figure 1-3 Site Location Map  
NAS Cecil Field

## 4.2 BASE HISTORY

NAS Cecil Field was established in 1941 and provides facilities, services, and material support for the operation and maintenance of naval weapons, aircraft, and other units of the operating forces as designated by the Chief of Naval Operations. Some of the tasks required to accomplish this mission include operation of fuel storage facilities, performance of aircraft maintenance, maintenance and operation of engine repair facilities and test cells for turbo-jet engines, and support of special weapons systems.

### 4.2.1 Site 5 - Oil Disposal Area

Site 5 is east of Perimeter Road and to the west of Lake Fretwell. Site 5 covers an area of approximately 2 acres where liquid wastes consisting of waste oil and fuel were disposed in a pit and allowed to evaporate and drain into the soils. Visible staining of soils is evident at the site and a distinct petroleum odor exists when soils are disturbed. Site 5 is primarily vegetated with grasses and slash pines; however, areas of the site are void of vegetation. The area north of the site is wooded. The site is flat with a small gradient towards the east.

Unknown quantities of waste fuel and oil were dumped at site 5. Based on the appearance of soils and odor still present at the site, waste liquids may have been disposed at the site more recently than the 1950s. Solvents, paints, and paint thinners may have also been mixed with waste oils disposed at the site; however, specific records of such disposal are not available. A disposal pit can be seen on 1969 aerial photographs.

### 4.2.2 Site 11 - Wooded Disposal Area

The Golf Course Pesticide Disposal Area, is in a wooded area between the 11th fairway and the 17th green at the NAS Cecil Field golf course, Jacksonville, Florida. Site 11 was used by golf course maintenance personnel for the disposal of empty, partially full, and full pesticide containers from the early 1970s until 1978. Containers were reportedly buried in a pit approximately 40 feet wide by 40 feet long. This pit was reportedly at the golf course between fairways 11 and 17.

The area is covered with dense undercover. An access road and several small trails that traverse the site appear to be well maintained and free of vegetation. The greens and fairways east and west of Site 11 are flat and grassy.

### 4.2.3 Site 17 - Oil and Sludge Disposal Area Southwest

Site 17 is east of Perimeter Road in the southwest part of NAS Cecil Field. Site 17 covers an area of approximately 2 acres where liquid wastes consisting of waste oil and fuel were disposed in a pit and allowed to evaporate and drain into the soils. The waste disposal area reportedly was an unlined pit approximately 50 feet in diameter and 3 to 5 feet deep. Visible staining of base occurred. Site 17 is primarily vegetated with grasses and slash pines; however, areas of the site are void of vegetation. The site is flat and some ponding of water on the surface is evident during the wet seasons. Disposal was conducted at Site 17 for a 2- to 3-year period in the late 1960s or early 1970s. Liquid wastes from the fuel farm, aircraft intermediate maintenance

department, squadrons, and public works were typically taken to the site in bowzers (portable storage tanks) or 55-gallon drums, drained into the pit, and allowed to seep into the soil or evaporate. Waste oil and fuel were reportedly disposed at the site. Solvents, paints, and paint thinners may have also been mixed with waste oils and disposed at the site; however, specific records of such disposal are not available.

#### 4.2.4 Site 103rd Street - Service Station

The site is a jet fuel line operated by NAS Cecil Field, and NAS Jacksonville on the Florida Department of Transportation (FDOT) 103rd Street right-of-way approximately 1/2 mile east of I-295 between Daniell Road and Harlow Boulevard, Duval County, Jacksonville, Florida. The affected area includes property south of the 103rd Street right-of-way including the Texaco, C. Hawkins residential and Kerr-McGee properties.

On June 2, 1989, excavation and ground dewatering began at the Kerr-McGee Service Station in preparation for replacement of underground gasoline storage tanks. On June 5, 1989, construction revealed a petroleum product/water mixture seeping into the excavation. A groundwater sample taken from the site identified the petroleum product as from the kerosene analytical group. The suspected source of the kerosene analytical group was tentatively identified as an eight-inch diameter steel jet fuel line operated by NAS Cecil Field.

A soil gas survey presence and revealed the presence of petroleum hydrocarbons in the soils. One source of the hydrocarbon has been determined to be the eight-inch diameter pipeline that provides JP-5 fuel from NAS Jacksonville to NAS Cecil Field. The Navy repaired the jet fuel line on April 23, 1990.

## 5.0 NSY CHARLESTON, CHARLESTON, SOUTH CAROLINA

### 5.1 BASE LOCATION

Charleston Navy Base (NAVBASE) is on various contiguous and discontiguous properties in Charleston and Berkeley counties on South Carolina's central coast. The base is on both the east and west banks of the Cooper River, approximately five miles north of downtown Charleston (Figure 1-4).

Active dredge spoil disposal areas are located on Naval property between the Cooper River and Clouter Creek. Active dredge spoil disposal areas are also on the southern portion of Daniel Island and Drum Island.

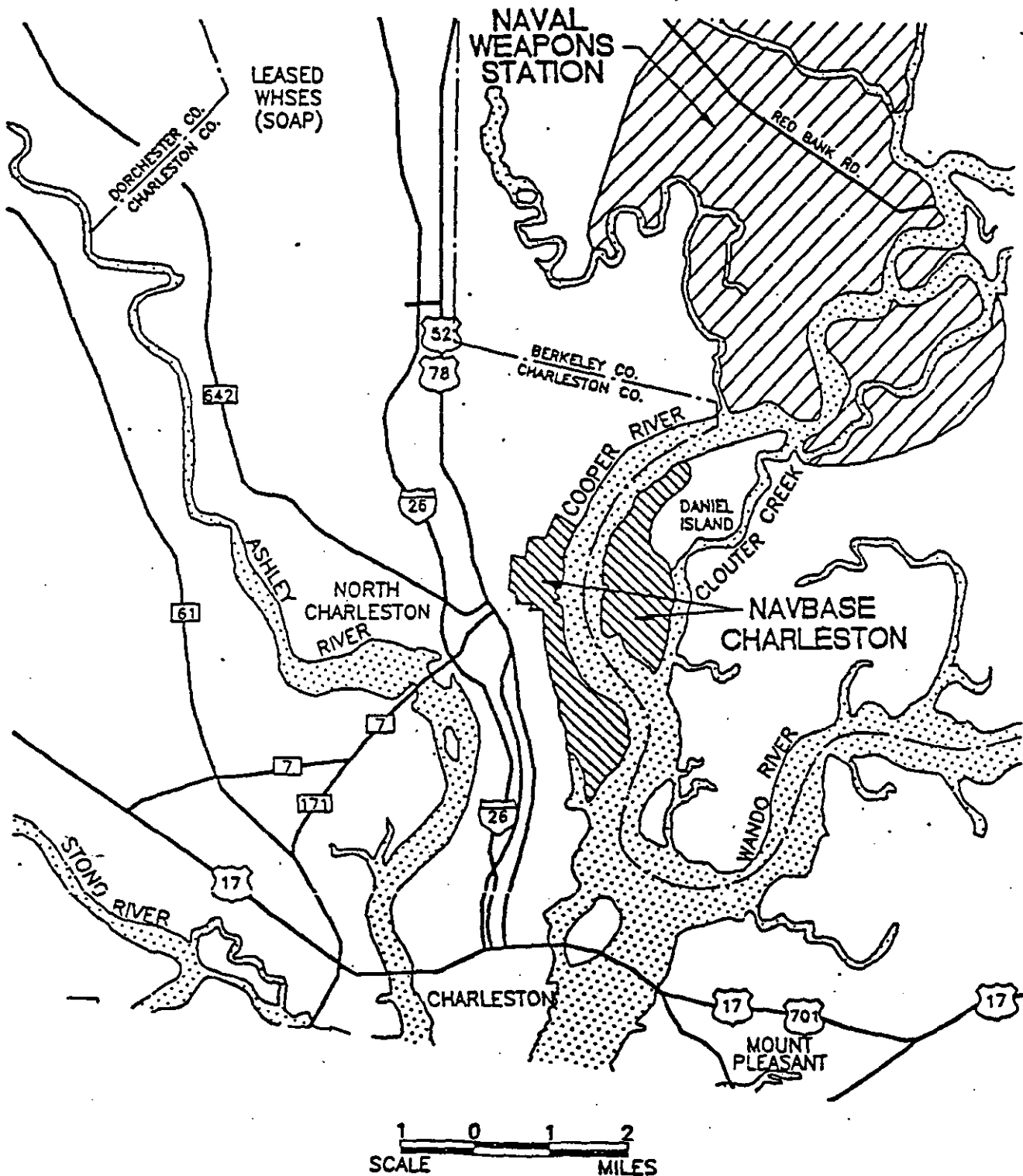


Figure 1-4 Site Location Map  
 NSY Charleston

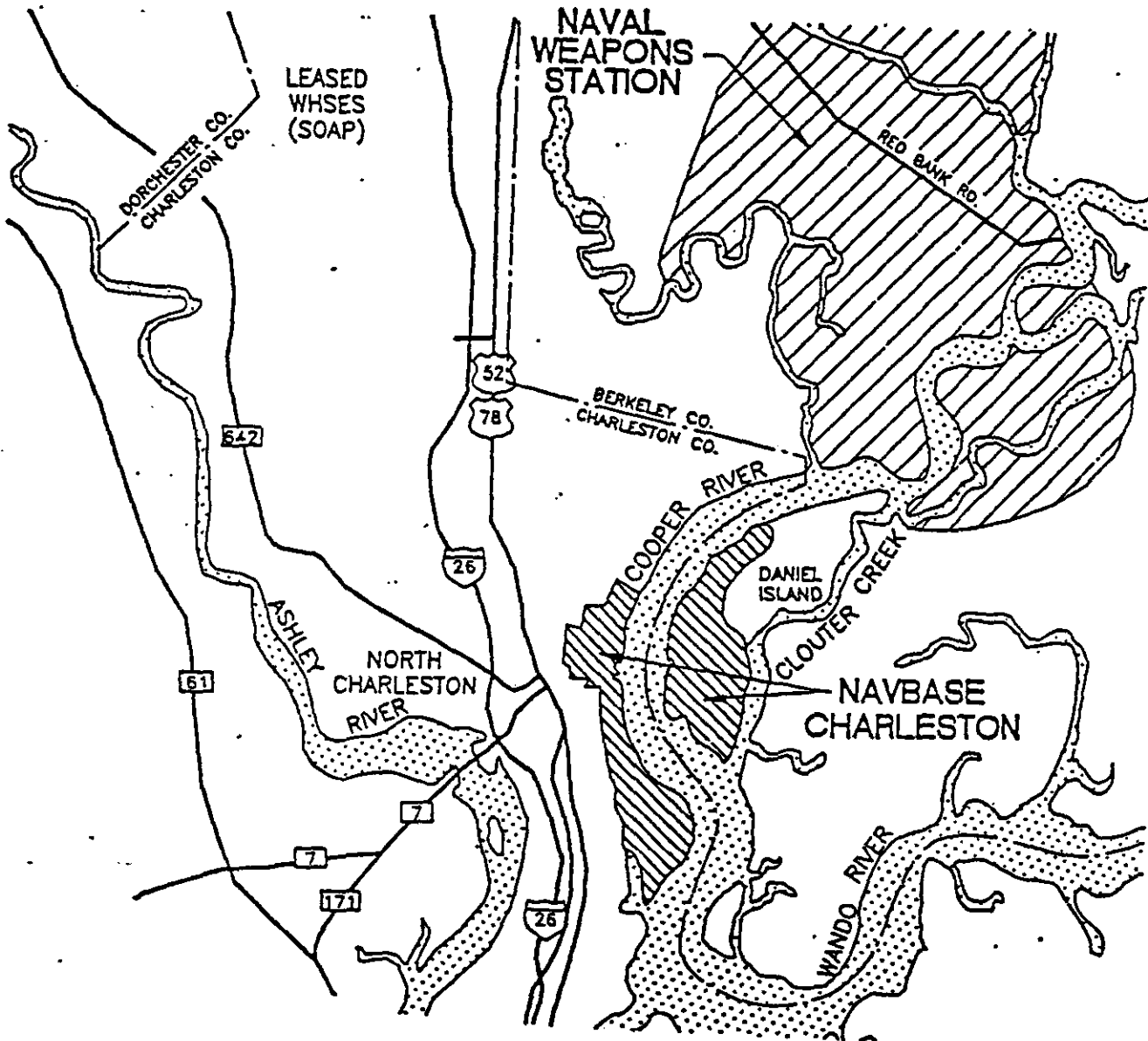


Figure 1-5  
Site Location Map - NWS Charleston

## 6.2 BASE HISTORY

The NWS Charleston complex is divided into three areas: (1) South Annex, commissioned in 1918; (2) the Naval Weapons Station, commissioned in 1941; and (3) the Polaris Missile Facility United States Atlantic Fleet (POMFLANT), commissioned in 1945.

Most of the adjacent land in the vicinity of NWS Charleston includes undeveloped areas of marshes and pine forrest. North, northwest, and east of POMFLANT are undeveloped areas of these marsh and forested stands. Included within the marsh area, just east of POMFLANT, is a small recreational facility called Bushey Park. East of NWS Charleston are marshes and forested areas, whereas south and southwest is the city of North Charleston, South Carolina. The western boundary of this facility consists of undeveloped woodlands and several small towns, including Goose Creek and Hanahan.

### 6.2.1 Site 1 - Old Temporary North Side Burn Area

The site is in the north-central section of the POMFLANT area.

No signs of the burning operations were evident during previous onsite survey. The area utilized for burning is approximately 550 feet long and 400 feet wide. In 1983, it was noted that the unit was covered by unstressed vegetation.

The site was managed by the Army from 1946 to 1952. The vegetation from the area was cleared in 1946 to handle overflow from the Old North Side Burn Area (PSC 4). The material burned reportedly consisted of munitions and sludges containing 2,4,6-trinitrotoluene, tetryl, black powder, and primer materials. There is no documented release history for this site, but since the same wastes present at the Old North Side Barn Area were apparently handled here, the same constituents detected in the soil and groundwater at the Old North Side Area may be present. These constituents include nitroaromatic and polynuclear aromatic compounds in soil and chromium, lead, benz(a)anthracene, and naphthalene in groundwater.

### 6.2.2 Site 2 - Old North Side Munition Demilitarization Area

The site is in the west-central portion of the POMFLANT area, and is heavily vegetated with no signs of stress.

The Munitions Demilitarization Area (MDA) was constructed by the Army in approximately 1947. The facility was used to clean out the insides of 240- to 500-pound bombs. Cleaning operations utilized a mix of steam and water to clean the bombs. Sentling tanks were provided for treatment of the effluent which was discharged to surface drainage in the area. Specifics on the type of wasted managed is unknown. The only reported waste managed was TNT.

The operation at the facility ended after less than six months.



### 6.2.3 Site 3 - Old North Side Landfill

The Old North Side Landfill is in the southwest section of POMFLANT, and is at the headwaters of Foster Creek.

The site covers an area of approximately 10 acres. Some of the material disposed is uncovered, and mainly household and construction debris was observed. The area surrounding the site is heavily vegetated marsh and is bordered on both east and west by tributaries of Foster Creek.

The site was reportedly used from 1962 until 1978 for disposal of waste generated by the POMFLANT area and for that portion of the Weapons Station north of Red Bank Road. It is estimated that between 500 and 1,500 gallons of oily waste and solvents were disposed of at this site annually.

Groundwater samples collected in 1985 exhibited detectable levels of volatile organic chemicals (VOCs). Samples collected in 1987 indicated elevated concentrations of metals and petroleum hydrocarbons.

Stream sediment samples collected from drainage ditches downgradient of the landfill detected metals and VOCs. Purgeable hydrocarbons were detected at low concentrations in several of the 1990 sediment samples collected adjacent to the landfill area. Polynuclear Aromatic Hydrocarbons (PAHs), which were not previously analyzed for, were detected at low concentrations in samples from the west of the landfill.

### 6.2.4 Site 4 - Old North Side Burn Area

The site is in the south central section of the POMFLANT area.

The site is currently used for recreational purposes, as an obstacle course, and a baseball field. Personnel bunkers used during ordnance operations are still present. Groundwater is approximately 10 feet below ground surface. Surface drainage from the area is south-southeast through small tributaries that drain into Foster Creek, which is approximately 3,000 feet to the south.

The site was used for the burning of waste from Army operations at Liberty Hall and Charleston Army Depot (CHAD) from 1940 to 1952. The site received sludges and munitions, for burning or detonation, which contained 2,4,6-trinitrotoluene, tetryl, black powder, and primer materials.

In 1987, four monitoring wells were installed to a depth of 40 feet below ground surface and are screened in the shallow water table aquifer. Groundwater sampling conducted in 1987 detected the presence of metals and Polynuclear Aromatics (PNAs). Three of the four wells were resampled during the Phase II Confirmation Study in 1990. Chromium increased from the 1987 concentrations in all three wells, but no contamination from purgeable hydrocarbons, PAHs, or nitroaromatic sources was detected.

Sediment and soil samples from the 1985 and 1987 studies detected metals, nitroaromatic, and polynuclear aromatic compounds. Sediment and soil samples collected in 1990 detected low

concentrations of metals. In addition, PAHs and trace concentrations of purgeable hydrocarbons were detected.

#### **6.2.5 Site 5 - North Side (Public Works) Storage Area**

The site is in the southern section of the POMFLANT area outside of Building 380.

The site is L-shaped; approximately 150 feet long by 50 feet wide on the west side of Building 380, and approximately 50 feet long and 25 feet wide on the south side of building. The area is partially covered with asphalt.

The site has been operational since the mid-1970s and is active today. The site is used for the storage of an asbestos dumpster, transformers, polychlorinated biphenyl(PCB) transformers, and drums containing drained battery casings. Most of the transformers are stored on a wooden platform approximately three feet above ground surface. Some transformers directly on the ground surface and some battery casings were not containerized, but were stored on pallets on the ground.

Reportedly, soil samples were collected along the fence line of the site and analyzed for PCBs. Reportedly, no PCBs were detected.

#### **6.2.6 Site 6 - Old POMFLANT Waste Water Lagoons**

The two former water lagoons are in the southwest section of the POMFLANT area. The two lagoons covered an area of approximately 5 acres. The lagoons are now dry and heavily vegetated with grasses. Visible are some mounds of soil which are remnants of the lagoons's earthen berm.

The lagoons were in operation from approximately 1976 through 1983. Reportedly the unlined lagoons were primarily used for the treatment of domestic waste generated by nearby base housing areas. Additionally, this site may have received waste from other areas of the facility. Discharge was to a NPDES-permitted outfall. There is no record of a past release from this site.

#### **6.2.7 Site 7 - Underground Waste Oil Storage Tank**

The site is at the Navy Exchange Service Station (Building 724) in the north-central section of the Weapons Station. The site currently contains a 550-gallon capacity steel tank which lies beneath a paved area behind Building 724. The site is in a commercial zone on a public road (Red Bank Road).

Two 550-gallon underground waste oil tanks were reportedly in use at the site since 1963. During the removal and replacement of the tanks, only one tank was discovered, removed, and replaced. The existing tank receives used engine oil, transmission oil and other petroleum products drained from vehicles during servicing. Approximately every two months, a private contractor pumps 200 to 300 gallons of oil from the tank. There is no documented history of release from the existing tank.

#### 6.2.8 Site 8 - Otto Fuel II Storage Shed

The site is at Building 984 in the north central section of the Weapons Station. The site is in a fenced compound surrounded by grass and two paved entrances. The shed is constructed of corrugated metal with approximately dimensions of 25 feet long by 35 feet wide, by 15 feet high. The open sides serve as doorways. The ground surface adjacent to the doorways is asphalt and/or paved concrete, connecting each doorway with the access road near the site. The design storage capacity is 453 55-gallon drums.

The site has been active since approximately 1983. Drums containing both product grade Otto Fuel II and wastes, such as solids generated from cleanup of a leak or personal protective clothing that was contaminated by Otto II Fuel, are stored on pallets in the shed. There is no history of a release at the site.

#### 6.2.9 Site 9 - Consolidated Storage Facility

The site is southwest of Building 52 in the western section of the Weapons Station. The site is an outdoor storage area comprised of a product storage area and a hazardous waste accumulation area (HWAA). The entire site covers approximately 28,000 square feet, of which the HWAA covers approximately 7,000 square feet.

The HWAA is approximately 100 feet long by 70 feet wide and is surrounded by a six-foot-high chain-link fence. Surrounding the fence is a berm approximately nine inches high. A roofed, six-foot by six-foot concrete pad adjoins the fenced area outside the northeast corner. Inside the fenced area, approximately half of the ground is paved with concrete, and the other is unpaved. No runoff controls are present between the paved and unpaved sections. The concrete paved area is surrounded on the remaining three sides by a concrete dike, approximately four inches high. The fenced area is designed for a maximum storage capacity of 727 55-gallon drums.

The site has been operational since approximately 1981 and is active today. The product storage area is utilized for the storage of containerized product material. The drums and/or containers are stored on pallets on asphalt and/or soil. The containerized waste stored at the HWAA include toxic flammable, degreasing agents, solvents, waste paints, pesticides, and PCB transformers. There is no history of release for this site.

#### 6.2.10 Site 10 - Building 930 Underground Storage Vault

The site is at Building 930 in the east-central section of the Weapons Station.

The vault is underground on the south side of Building 930, constructed of epoxy-sealed concrete, and has a storage capacity of 2,500 gallons.

The site was constructed in 1982 and is currently operational. The vault receives runoff from the Otto Fuel II storage tank secondary containment system and Otto Fuel II wastes generated from refurbishing and maintenance operations performed within Building 930. The waste Otto Fuel is typically comprised of 95% water and 5% nitrated ester. There is no history of release for this site.

#### **6.2.11 Site 11 - Old South Side Pesticide Rinse Area**

The site is at Building 80 and the area immediately surrounding the building, bordering the golf course in the eastern portion of the Weapons Station.

Building 80 is a small Quonset hut located on the golf course. Surface drainage for the northern portion of the site is north via a north-flowing drainage way. Drainage from the western and southern sides of the site is toward a south-flowing tributary which drains into Wilson Pond. Wilson Pond is approximately 400 feet south of the rinse area.

The site was operational from 1975 to 1981. Apparently, pesticide mixing and cleanup of pesticide application equipment occurred here.

Soil, sediment and surface water samples were collected at the site in 1977. The results indicated the presence of arsenic in all three media. During the 1985 Verification Study, four soil/sediment samples were collected and arsenic and pesticides were detected. During the 1987 Confirmation Study, arsenic and pesticides were detected in the soil/sediment samples. Arsenic was also detected in surface water from a drainage ditch near the site.

A Verification Study conducted in 1985 did not detect pesticides in samples from shallow water. During the Confirmation Study in 1987, all wells were sampled and only low levels of hexachlorocyclohexane (lindane) were detected.

#### **6.2.12 Site 12 - Former PCP Treatment Area**

The site is in Building 88 in the eastern section of the Weapons Station. The portion of Building 88, in which Pentachlorophenol (PCP) wood treatment occurred, has been enclosed. Surface drainage from the unit is to several open ditches east of Building 88, which drain southeast and north, eventually exiting at two points beneath the building's perimeter security fence. Drainage from the unit ultimately reaches Cooper River.

The unit was active from approximately the early 1970s until 1981. Wood treatment occurred at the unit approximately every two or three years lasted two to three months. PCP was the primary waste generated at the site. Other wastes which may have been at the unit are trichloroethanol and other solvents.

PCP was detected in soil, sediment, and surface water samples.

#### **6.2.13 Site 13 - Golf Course (Public Works) Pest Control Shop**

The site is at Building 17 in the eastern portion of the Weapons Station. The pesticide mixing room is in Building 17, the Public Works Pest Control Shop. The room is equipped with a stainless steel sink where small quantities of pesticides are mixed just prior to being applied. A fume hood is in place over the sink to control vapor emissions to the room during mixing operations. The floor of the room is concrete and slopes to a floor drain which connects to the sewer system. The outside door opens onto a concrete pad approximately 20 feet by 20 feet wide. The perimeter of the pad is slightly elevated to form a 2 to 3 inch lip. The pad slopes to

a center drain which is connected to the sewer system. The pad was reportedly designed and built for use as a pesticide mixing and rinsing area, but reportedly it has never been used for those activities.

The pest control operations have been housed in Building 17 since 1981. Mixing of pesticides and rinsing of pesticide applicator equipment is conducted at the site. Only small quantities of pesticides are handles at any one time, usually enough for a single application. The application equipment is usually a small 2-gallon pressure spray tank. The application equipment is cleaned in the sink after each use. Any spills or residues resulting from the mixing and cleanup operations are diluted and rinsed down the sink drain to the sewer system. Other than these discharges to the sewer system, there is no record of past releases from this site.

#### 6.2.14 Site 14 - Building 58 Underground Storage Vault

The site is at Building 58 in the eastern section of the Weapons Station. The site is an underground tank constructed of epoxy-sealed concrete with a 2,500 gallon capacity. The unit has been active since 1984. The vault received waste Otto Fuel II from the operations in the torpedo cleaning room inside Building 58. The Otto Fuel II waste is typically 95% water, and 5% nitrated ester. The waste may also contain agetine, a material similar to kerosene, which is used to clean torpedoes.

#### 6.2.15 Site 15 - Ordnance Incinerator

The site is in the eastern portion of the Weapons Station and is a stationary demilitarization furnace with an emission control system. The furnace is at thick-walled steel burn-box with an undergrade main burner and an afterburner in the flue entrance. The emission control system consists of a steel box furnace with a conveyor system, a cyclone, a bag house and a draft-induction fan. Associated components of the furnace include a feed conveyor, dual exhaust stacks, heat exchanges and a control console.

The furnace has been operational since 1983 and is an active unit. The furnace burns small arms ammunition. Munitions are manually loaded onto a feed conveyor belt which leads to a vertical feed chute mounted on top of the furnace. The furnace inlet is baffled to stop shrapnel from returning into the feed chute. Munitions either burn or explode in the furnace depending on the nature of the munition. The metal components from the treated munitions are dumped from the grates onto the discharge conveyor and sprayed with water. The spray water for cooling is collected in a reservoir tank and recirculated back through cooling nozzles. The cooled scrap metal is discharged onto the inspection conveyor and moved outside the barricade. The scrap is inspected to ensure that no unexploded rounds remain in the scrap. The scrap is then placed in barrels.

Cooling water is collected in a cooling tank and drains into an underground piping system which discharges to a ditch at the east boundary incinerator area perimeter fence.

The cyclone and bag house receive wastes from the burning munitions. The finer dust particles are collected in 55-gallon drums from both the bag house or cyclone units. When full, the drums are removed and sealed for disposal by an off-site contractor. The incinerator failed the 99.99%

portion of the trial burn in April/May 1987. The Navy will continue to use the unit, but seek to permit it. The incinerator does not have carbon monoxide and heavy metals monitoring equipment, or an automatic shut-off control, which is required under RCRA regulation. The unit has no release history. Inspections by SCDHEC for air emissions have consistently reported the incinerator is in compliance.

#### **6.2.16 Site 16 - Old South Side Landfill**

The site is in the southern section of the Weapons Station, within the tidal marsh of Goose Creek. The site covers approximately 10 acres. When the site was closed in 1980, it was covered with a layer of approximately two feet of local fill. The area is currently covered by trees, grasses, and shrubbery. Various debris lies on the surface, dominated by construction rubble. Surface drainage is to the south-southwest at several tributaries which empty into Goose Creek.

The site received wastes from 1941 to 1978. Solvents and oily wastes generated by the NWS, POMFLANT, and ported ships were disposed here. The solvents included toluene, methyl ethyl ketone, xylene and acetone. The site reportedly received an estimated 5,000 to 15,000 gallons of such waste each year. The site also received solid wastes generated at the facility, including household waste, construction and demolition materials, empty containers from shop areas, and metal waste.

In 1984, two samples of surface seepage were collected and the laboratory analysis detected oil and grease, mercury and 1,1,1-trichloroethane in the samples. During the 1987 Confirmation Study, barium, iron, manganese, zinc, beryllium, and selenium were detected in the surface water. Barium, chromium, copper, iron, lead, manganese, and zinc as well as petroleum hydrocarbons were also detected in sediment samples.

In 1985, low levels of selenium, barium, methylene chloride, 1,3-dichloroethane and benzene were detected in groundwater. Groundwater sampled during the 1987 study showed levels of iron, chromium, manganese, lead and selenium. Petroleum hydrocarbons were also detected in one well and another well showed levels of benzene and 1,2 dichloroethane.

#### **6.2.17 Site 17 - Old Missile and Waste Oil Disposal Area**

The site is in the southern section of the Weapons Station, east of the South Side Landfill (PSC 16). The disposal area is roughly rectangular in shape and is approximately 180 feet long by 90 feet wide. The surface of Site 17 is partially covered with paint cans, rubble, buckets, and discarded missile components. Most of the surface debris was removed in conjunction with recent roadwork through the area.

The site was active between 1950 and 1978. The site was predominantly used for surface disposal of solid waste, including discarded missile components and inert missiles. Between 1965 and 1966, reportedly sixty to eighty 55-gallon drums of waste engine oil were disposed of at this site.

Groundwater sampling from a monitoring well at the site detected lead and chromium.

#### **6.2.18 Site 18 - EOD Range**

The site is in the southern section of the Weapons Station just north of the South Side Landfill (Site 16) and the Old Missile and Waste Oil Disposal Area (Site 17). The site covers approximately 15 acres and is mostly vegetated. Approximately one-fourth of the site is being utilized to store munitions in trailers. The site is traversed by a dirt road. A bunker is on the north end of the EOD Range.

The site was used approximately 20 times per year between 1965 and 1980. The site is currently used to store live ammunition and is used for ordnance detonation only on an emergency basis.

Munitions for which the shelf-life expired, or otherwise did not meet specifications, were detonated, burned and/or buried. Munitions constituents include propellants, black powder, and pyrotechnic materials. An estimated 80 to 100 cases of mercury batteries were buried in the unit around 1973 and were later excavated. In the past, disposal commonly consisted of placing a maximum of 150 pounds of ordnance in a pit, pouring diesel fuel on the ordnance if needed for burning, and then burning the ordnance. Combustion of ordnance is reportedly almost always complete. Buried ordnance may still be present in the unit. Between 1966 and 1970, several truckloads of outdated medical supplies from submarines were also disposed of at the unit.

#### **6.2.19 Site 19 - Pier "C" Accumulation Area**

The site is in the southeastern section of the Weapons Station, and is an outdoor area which is fenced and paved with asphalt. The surface slopes towards a sump. The site temporarily stores hazardous wastes received from ships ported at NWS. Drums are set on pallets, and on the paved ground surface. The hazardous materials are transported from here to the Consolidated Storage Facility.

#### **6.2.20 Site 20 - Southside Building 950 Fuel Contamination**

The site is at Building 930 in the eastern portion of the Weapons Station, and is an underground fuel line outside Building 930. In February 1992, during excavation work adjacent to Building 930, contaminated soil was unearthed. A groundwater sample was analyzed and found to contain 69 ppb of petroleum hydrocarbon. The source of the product is suspected to be a small fuel oil line that reportedly leaked an unknown volume of oil before being repaired.

#### **6.2.21 Site 21 - Southside Building 930 Ditch**

The site is at Building 930 in the eastern section of the Weapons Station. The drainage ditch for Building 930 runs along the eastern, southern, and western perimeters, and partially along the northern perimeter of the building. Outside the fenced area, the ditch heads due north.

This ditch was identified as an area of concern since a layer of fluid was noted on surface waters in the ditch. It was determined that certain drains inside Building 930, used for disposal of hydraulic fluids and dilute waste Otto Fuel, were connected to the storm drain system. Effluent from these drains would pass through the ditch.

#### **6.2.22 Site 22 - Southside Building 930 Paint Sump**

The site is at Building 930 in the eastern section of the Weapons Station, and is a sump which collected residues from the paint spray booth. The site was operational from the 1960s to the 1980s. During the late 1980s, a paint spray booth in Building 930 was converted to a dry filter system from a water curtain system. The concrete sump, used for collection of curtain water, was never closed and now contains paint residues. The integrity of the concrete is unknown.

#### **6.2.23 Site 23 - Southside Container Repair Facility**

The site is in the eastern section of the Weapons Station, and is an open sandblasting and painting area covered with grit and residues. The site is active, but the start of operations is unknown. This facility is used for the repair of large painted metal shipping containers. Sandblasting operations are conducted in the open. Blasting grit and residues have collected on the grounds surrounding the unit. Additionally, open air repainting of the containers could potentially have contaminated the adjacent ground.

#### **6.2.24 Site 24 - Southside Railcar Sandblasting**

The site is in the eastern section of the Weapons Station, and is an open sandblasting area covered with grit and residues. The site is active, but the date when operations started is unknown. Operations at this unit are similar to those at Site 34. Grit and residue samples were analyzed in 1989-1990 using extraction procedure (EP) toxicity methods and were determined to be nonhazardous.

#### **6.2.25 Site 25, Old Southside Hazardous Waste Facility**

The site is in the eastern section of the Weapons Station, and is adjacent to the current Hazardous Waste Facility.

The site was active from 1980 to 1983. In the early 1980s, and before the construction of the current Hazardous Waste Storage Facility, this unpaved site served as the accumulation point for wastes from throughout NWS Charleston. Open or damaged containers were not adequately protected from the weather and may have spilled residues onto the ground.

#### **6.2.26 Site 26 - Southside MWR Recycling Laydown Area**

The site is in the eastern portion of the Weapons Station, and is adjacent to the Old Hazardous Waste Facility. The site has been active from the 1980s to the present, and serves as the accumulation point for scrap metal that is to be sold for salvage. Most materials are inert, but some battery casing and hazardous product containers have been found on the site. It is not known if the containers have been rinsed. There may be the potential for soil contamination since these materials are not covered and have been exposed to the weather.



#### **6.2.27 Site 27 - Southside Building 37 Ditch**

The site is in the eastern section of the Weapons Station, and is a drainage ditch near Building 37. The site is active although the start date is unknown. Building 37 houses the NWS Public Works Machine Shop. Operations around the shop included parts degreasing and paint stripping. Residues from these operations are known to have escaped through the storm drain system to the ditch adjacent to the building. Visibly contaminated soil have been excavated and drummed for proper disposal.

#### **6.2.28 Site 28 - Southside Building 17 Ditch**

The site is by Building 17 (Pest Control Shop) in the eastern portion of the Weapons Station, and is a drainage ditch near Building 17. Empty pesticides drums have been left outside the building and filled with rainwater. Diluted residues spilling from the drums may have washed into the adjacent ditches.

#### **6.2.29 Site 29 - Northside Building 320 Ditch**

The site is by Building 320 in the eastern section of POMFLANT, and is a drainage ditch near Building 320. The site is active, but the start date is unknown. Building 320 housed a paint spray booth with a water curtain. Curtain water is known to have drained to the ditch adjacent to the building in the past; currently, release of curtain water is controlled. Potential for contamination of soils and surface water in the ditch is moderate since paint residues would have been in the discharged curtain water.

#### **6.2.30 Site 30 - Northside Building 354 Ditch**

The site is by Building 354 in the eastern section of POMFLANT, and is a drainage ditch by Building 354. The site is active, but the start date is unknown. This unit is similar to Site 29, except that the paint spray booth is no longer in service.

#### **6.2.31 Site 31 - Dumpsite at Lagoons**

The site is in the western section of the Weapons Station, south of Red Bank Road and just north of the Old Wastewater Treatment Lagoons. The site is approximately 100 feet long and 50 feet wide and is vegetated.

The age and operation of the site are unknown. During a site inspection in 1988, some construction debris and soil piles were observed at the site.

#### **6.2.32 Site 32 - Old Wastewater Treatment Lagoons**

The site is in the western section of the Weapons Station south of Red Bank Road. The three lagoons cover approximately 21 acres. Each lagoon is approximately 800 feet long by 400 feet wide and formed by earthen berms. The interior of the lagoons is above surrounding grade and partially vegetated by grasses. Aerator cradles are still in place in the central lagoon. The lagoons are not lined. A drainage ditch surrounds the exterior of the lagoons.

The lagoons were in service from approximately 1976 to 1983. Domestic waste from a nearby housing area was reportedly processed at the lagoons. It is unclear if other buildings contributed waste to the treatment system. Discharge from the lagoons was chlorinated prior to discharge into Goose Creek. During operation, discharge was to a NPDES outfall (Permit No. SC0022764).

#### 6.2.33 Site 33 - Wastewater Treatment Facility (Building 935)

The facility was in Building 935 in the southern portion of the Weapons Station, and was a contact stabilization unit consisting of aeration, clarifier, chlorinator and a digester. The facility was constructed in 1970 and operated until 1981 when the treatment facility was bypassed. Wastes which were formerly managed at Building 935 were directed to the Berkeley County Wastewater Treatment Plant in 1981. Conflicting information exists on the types of waste that Building 935 may have received.

#### 6.2.34 Site 34 - Pest Control Shops

The site is in the eastern section of the Weapons Station. The historical and current usage of pest control shops at the facility is unclear. According to the files reviewed, Buildings 17, 50, and 80 had a history of pesticide management. Materials reviewed on the location of age of units and information collected is contradictory. The area surrounding Building 80 has been investigated due to pesticide contamination resulting from its use as a pest control shop from the 1970s to 1981. The field team was informed by facility personnel that Building 80 had never been used for pesticide mixing or equipment cleaning. Some pesticides have been observed to be stored at Building 57.

Building 17 has reportedly served as the Pest Control Shop since 1981. Building 80 was reportedly used from 1975 to 1978. There is a lack of documentation on the length of time any particular area was used and which areas were utilized as pest control shops. The contamination identified at the area adjacent to Building 80 may be present at other areas that have managed pesticides.

#### 6.2.35 Site 35 - POL Storage Areas

Based on the 1988 Interim RCRA Facility Assessment, there were over 125 petroleum, oil, and lubricants (POL) storage areas at the NWS. A typical POL storage areas consist of palletized 55-gallon drums, and/or large above-ground tanks. Several storage areas are inside buildings. In 1981, there were a minimum of 16 POL tanks with a volumetric capacity greater than 6,000 gallons. Drums containing petroleum, oil, and lubricants are generally stored on pallets on a sandy area. POL tanks generally have a secondary containment system comprised of earthen berms. Waste oil is collected at an undetermined number of buildings which are then accumulated at POL storage areas. Building 366 and 903 temporarily store waste oil. Batteries have been stored at the Building 903 POL Storage Area. The POL storage areas have been used approximately since the start up of the facility under Army ownership in 1918, with individual areas starting up and closing on an as-needed basis. The white sand on which polluted drums were stored at Building 903 was covered with oil blotches.

### 6.2.36 Site 36 - POL Storage Areas

Based on the 1988 Interim RCRA Facility Assessment, there are 95 underground storage tanks at the Naval Weapons Station. All the tanks contain petroleum products. Seventy-three of the tanks contain fuel oil used primarily for heating purposes. Fourteen tanks are utilized for vehicle fuel storage, eleven for gasoline tanks and three for diesel. The underground gasoline tanks range from 0 to 20 years old and vary in capacity from 4,000 to 10,000 gallons. The diesel fuel tanks range in age from 6 years to over 20 years and in capacity from 5,000 to 10,000 gallons. Six tanks contain diesel fuel for emergency generators. The tanks range in age from 0 to 20 years. One tank has a 10,000 gallon capacity and the other five tanks have a 500 gallon capacity.

## 7.0 NAVAL AIR STATION (NAS) KEY WEST

### 7.1 BASE LOCATION

NAS Key West (Figure 1-6) is approximately 150 miles southwest of Miami on the western two major islands of the Florida Keys (Boca Chica and Key West). It is connected to the mainland by the Overseas Highway (U.S. Highway No. 1). Key West is about 4 miles long and 1.5 miles wide; Boca Chica Key is approximately 3 miles long and 3 miles wide.

### 7.2 BASE HISTORY

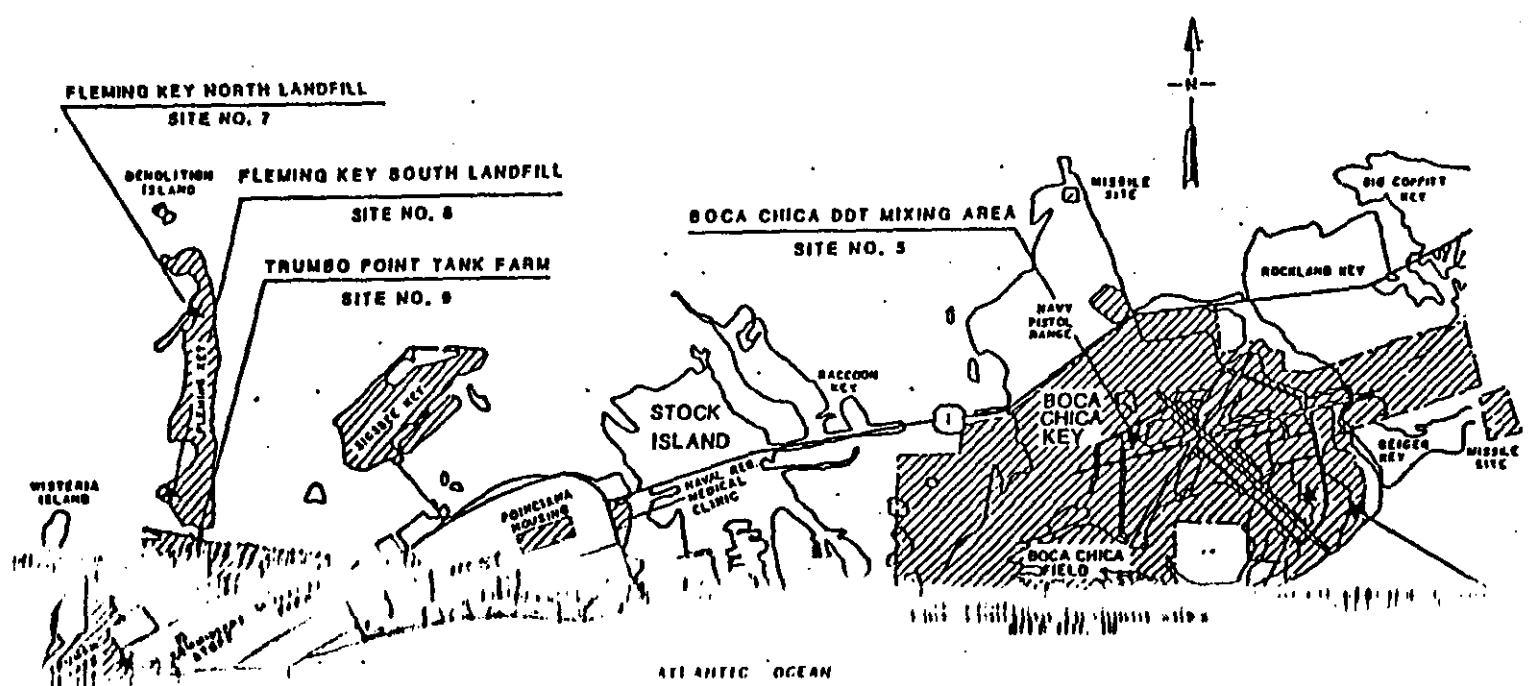
Naval Base activities in Key West began at Trumbo Point Annex with the commissioning of the Naval Air Base in December 1917. At that time, a seaplane training center and blimp facility were established and used primarily for anti-submarine patrol operations and a flight training center. At the end of World War I, the Air Station and Naval Base were decommissioned.

With the outbreak of World War II, the Naval Station was greatly expanded to serve as support to other Naval activities in the area. In December 1942, the Navy assumed jurisdiction of Boca Chica Field, and in March 1945, the Naval Air Facilities at Key West and Boca Chica were combined into one activity under the designation of U.S. Naval Air Station, Key West. The mission of NAS Key West is "to maintain and operate facilities and provide services and material to support operations of aviation activities and units of operating forces of the Navy and other activities and units designated by the Chief of Naval Operations.

#### 7.2.1 Site 1 - Truman Annex Refuse Disposal Area

The Truman Annex Refuse Disposal Area is located along the southern shore of Truman Annex on Key West, and is reported to cover an area of approximately seven acres, including the antenna field and the area to the immediate north. This site reportedly consists of landfill material in a shallow fill area with the landfill extending beyond the natural shoreline. Previous investigations have reported that groundwater in the area is approximately 2 to 3 feet below land surface and flow is in a southerly direction towards the Atlantic Ocean.

Figure 1-6 Site Location:  
NAS Key West



1970s. DDT contamination at the site reportedly occurred during the removal of a 500 gallon mixing tank and a 1,000 gallon storage tank, both of which were located to the west of Building 915.

It has been verbally reported that pesticides were mixed with waste fuel oil. Mixing with fuel oil allowed the pesticide to remain floating on the surface of any standing water in order to destroy insect larvae.

A slight odor of pesticide was detected at the site during the onsite survey. A man-made drainage ditch is located just south of the site. Drainage from the ditch is toward a large borrow pit to the east of the site. The area near the former building is partly covered with sparse grass, while the ditch has medium-sized mangroves around the banks.

#### **7.2.5 Site 7 - Fleming Key North Landfill**

Fleming Key North Landfill covers approximately 30 acres on the northern end of Fleming Key. Reportedly 4,000 to 5,000 tons of unknown wastes were disposed of annually into excavated trenches between 1952 and 1962. The trenches were typically cut 25 feet wide, 10 feet deep, and 500 to 1,000 feet in length.

In 1977, a building housing the U.S. Department of Agriculture Animal Import Center was constructed over a portion of the landfill. During the construction, wastes were excavated and transferred to an area immediately to the west.

Groundwater in the area is approximately 3 to 4 feet below the surface over much of the site and it is reported that saline groundwater was encountered during trenching.

#### **7.2.6 Site 8 - Fleming Key South Landfill**

The Fleming Key South Landfill covers approximately 45 acres on the southern end of Fleming Key. Reportedly, as much as 8,000 tons of unknown wastes were disposed of annually at the landfill between 1962 and 1982. Since 1966, the waste disposal activities of the City of Key West had been combined with those of the Navy at this site.

The open-trench disposal method was practiced at this site, with the trench constructed in a manner similar to those at the Fleming Key North Landfill. Reportedly, the trenches were partially filled with sea water when the wastes were deposited. Wet garbage was reportedly placed directly into the trenches and combustible wastes were taken to the western portion of the site and burned. The ashes and unburned wastes were then deposited into an area in the western portion of the site.

#### **7.2.7 Site 9 - Trumbo Point Annex Fuel Farm and Piers**

The Trumbo Point Annex Fuel Farm and Piers are located east of the piers at the Trumbo Point Annex. The Annex was constructed in 1918, using dredged materials, for use as a seaplane base. Since 1942, the Annex has been used as a fuel storage and distribution point. Fuel is received at this facility from tankers and then distributed by underground transmission lines to

From 1952 until the mid-1960s, the Truman Annex Refuse Disposal Area was used for general refuse disposal and open burning. No restrictions were placed on the types of wastes disposed of at the site. It is believed that in addition to general refuse, waste paint, thinners, and solvents were also sent here for disposal.

#### 7.2.2 Site 3 - Truman Annex DDT Mixing Area

The Truman Annex DDT Mixing Area is located at the former site of Building 265, which has been demolished. The site covers an area of about 0.25 acre and is located about 1,100 feet inland from the coastline. The site has no surface water features present.

From the 1940s to the early 1970s, the location was used as a DDT mixing area. Powdered DDT concentrate was mixed with water and temporarily stored in 55-gallon drums both inside and outside the former building. The mixed solution was transferred to trucks for disposal.

#### 7.2.3 Site 4 - Boca Chica Open Disposal Area

The Boca Chica Open Disposal Area is located in the southeastern part of Boca Chica Key, between the Perimeter Road and Geiger Creek. The site was operated as an open disposal and burn area from 1942, when the NAS was first established on Boca Chica, until the area was closed in the mid-1960s. These wastes might have included waste oils, hydraulic fluids, paint thinners, and solvents.

About 2,600 tons of waste from the NAS were reportedly disposed of and burned at this site annually. Whenever possible, this burn area was cleared of any remaining debris left over from the burning process and the debris was deposited in an area of unknown dimensions to the north of the burn area. Because the burning operation was not a controlled process, all wastes may not have been completely destroyed.

The burn area is presently clear of any debris with the exception of four abandoned above-ground tanks and a scrap iron rod pile located in the northwest portion. Around one tank, the sides, foundations, and ground are covered with an unknown black asphalt-like substance. The remaining three tanks are clustered together next to a scrap iron rod pile. Much of the southern portion of the burn area is subject to tidal inundation.

The debris area is of unknown size and has a predominant thick cover of mangrove trees, spotted with open areas of surface water. Debris can be seen lying among the mangroves and in these open areas. The presence of mangrove trees in the debris zone has led to this area being classified as a wetland, protected by state and federal dredge and fill regulations. The mangrove trees also indicate a saltwater environment, thereby suggesting the occurrence of saline water intrusion from the ocean.

#### 7.2.4 Site 5 - Boca Chica DDT Mixing Area

The Boca Chica DDT Mixing Area is located next to a man-made drainage ditch that is connected to a large borrow pit, along the west side of Runway 13. DDT mixing operations were conducted at this site in Building 915 (demolished in 1982) from the 1940s to the early

either Truman Annex or NAS Boca Chica. Fuels that have been stored at the site include No. 6 fuel oil, Bunker C oil, aviation gasoline, JP-4, and JP-5.

#### **7.2.8 Site 10 - Boca Chica Fire Fighting Training Area**

The Fire Fighting Training Area is located immediately west of the southern blimp pad. This area consists of two unlined circular pits approximately 20 feet in diameter and 2 to 3-feet in depth. The pits are surrounded by a gravel apron. The fire pit area is used about 5 to 10 times per year for training sessions during which flammable liquids (JP-5, waste oils, or hydraulic fluids) are poured onto mock airplanes within the pit and ignited.

### **8.0 NAS JACKSONVILLE**

#### **8.1 BASE LOCATION**

NAS Jacksonville is in southern Duval County approximately nine miles south of downtown Jacksonville, Florida. The site occupies approximately 3,800 acres on the west bank of the St. Johns River upstream from downtown Jacksonville (Figure 1-7). The operating portion of the site lies between U.S. Highway 17 and the St. Johns River; however, the site also occupies 515 acres west of U.S. Highway 17, adjacent to the Ortega River.

The site was commissioned in 1940, and originally designed for seaplane support. Currently the site has five major tenants: the Naval Aviation Depot (NADEP), the Naval Hospital, the Naval Regional Supply Center, Patrol Wing Eleven, and Helicopter Antisubmarine Wing One. The NADEP is the major tenant, consisting of approximately 50 buildings. The Naval Hospital is also a major tenant, with a 400-bed hospital building and support buildings.

#### **8.2 BASE HISTORY**

The NADEP has been a major tenant of the sites since 1940 when it operated as an Assembly and Repair Department of NAS Jacksonville. Its mission has been to provide a full range of maintenance, engineering, logistic, and support services to the fleet. On April 1, 1967, it became one of six modern industrial facilities commissioned by the Navy to perform in-depth rework, repair, and modification of aircraft, engines, and aeronautical components.

In December 1989, NAS Jacksonville was placed on the NPL, and in November 1990, a Federal Facilities Agreement (FFA) was signed between EPA, Florida Department of Environmental Regulation (FDER), and the Navy to coordinate actions at NAS Jacksonville.

Remedial investigations at the site commenced in 1982 with a study designed to collect and evaluate evidence that constituents of concern detected at selected might pose a health risk to people on or offsite. In 1983, an additional study to assess additional PSCs and verify the results of the 1982 study was conducted.

Past and present site operations have been the source of hazardous and nonhazardous materials. Operations on the site include torpedo maintenance, hazardous and nonhazardous waste

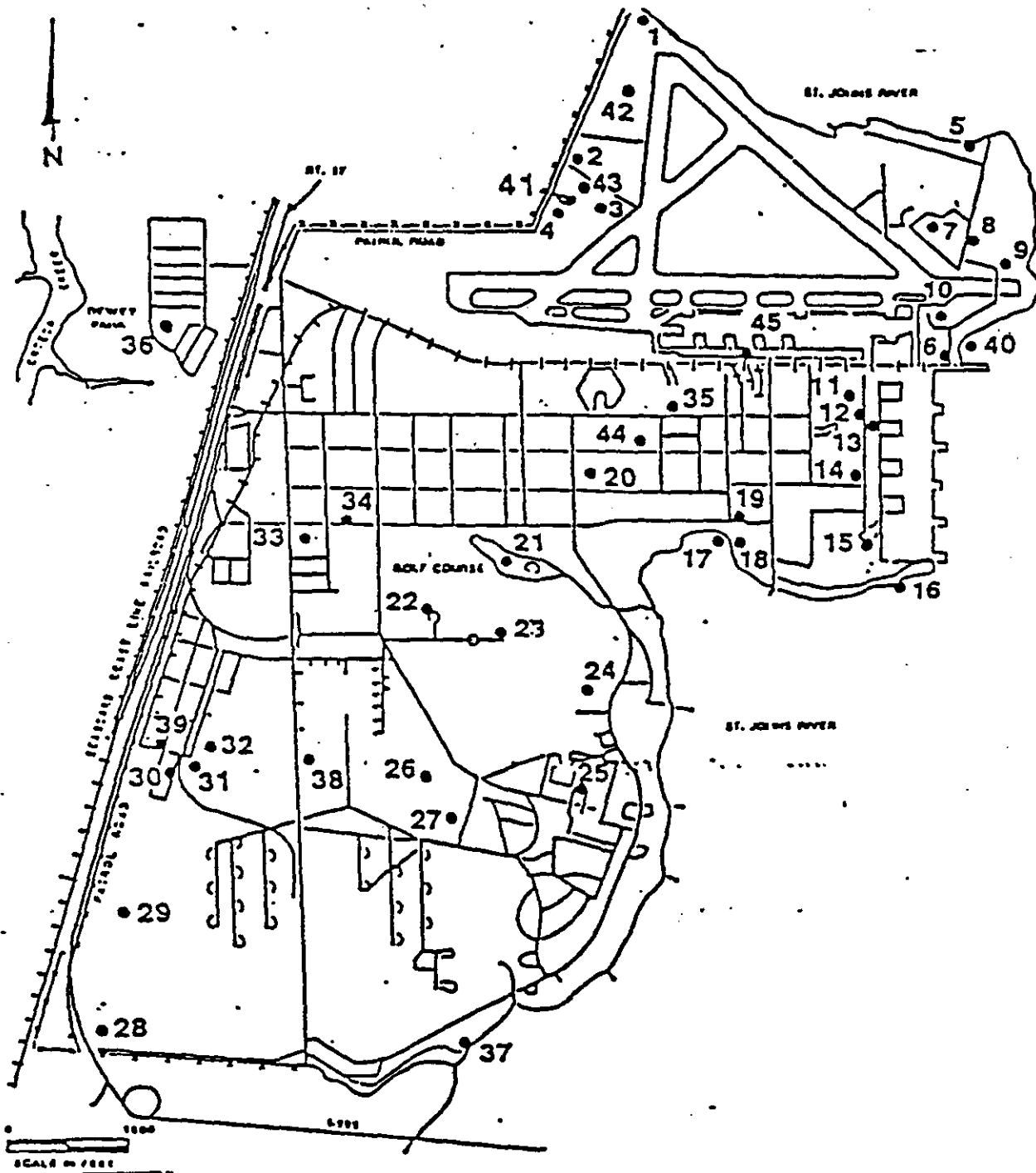


Figure 1-7 Site Location Map  
 NAS Jacksonville



generating operations, low-level radiological activities, hazardous materials storage, waste disposal, vehicle and ground support equipment maintenance, aircraft maintenance, operation of boiler and power plants, incinerators, underground storage tanks, and pest control shops.

Hazardous and nonhazardous operations generated include waste solvents, oil and fuel, paint wastes, aqueous wastes containing toxic heavy metals, acids and caustics, cyanide, paint stripper wastes containing chlorinated solvents and phenols, metal scrap and other inert materials, low-level radioactive radium paint wastes, vacuum tubes and other aircraft instrument dials, and pesticides and herbicides.

#### **8.2.1 PSC No. 1 - Patrol Road Turnaround Area**

This PSC is north of the patrol road turn-around along the shoreline of the St. Johns River. The Navy has used this area periodically for the disposal of construction debris to reclaim land and provide shoreline protection. The PSC contains rubble, consisting mostly of concrete and asphalt. The PSC is approximately 50 ft wide by 300 ft long. This specific date(s) of disposal and quantities disposed are not available.

#### **8.2.2 PSC No. 2 - Present Fire Fighting Training Area**

This PSC is in the immediate vicinity north of the sewage treatment plant. The PSC occupies an area approximately 100 ft wide by 100 ft long and is used for fire fighting training. Over the years, training personnel have ignited mock airplane forms using JP-4, JP-5, AV-GAS, or spent oil fuel. This area has been used for training from 1966 to the present. The Navy estimates that approximately 6,000 gallons of fuel have been burned at this site annually. The area immediately surrounding the PSC shows visible evidence of fire damage.

#### **8.2.3 PSC No. 3 - Wastewater Treatment Plant (WWTP) Former Sludge Disposal Area**

This PSC is just east of the sewage treatment plant. The area of the sludge disposal PSC is approximately 15 acres. The Navy dumped approximately 20,000 tons of sewage sludge containing metals and organics at this location from 1962 to 1980.

#### **8.2.4 PSC No. 4 - Pine Tree Planting Area**

This PSC is approximately 200 ft south of the sewage treatment plant. Until 1975 the Navy reportedly used this area for the disposal of paint shavings, sewage sludge, asbestos, oil, and other petroleum products. Paint shavings and sewage sludge are visible at various locations at the PSC.

#### **8.2.5 PSC No. 5 - Shoreline Fill, West of Fuel Barge Dock Area**

This area, used in the 1940s for waste disposal, is approximately 200 ft wide by 600 ft long. Visual inspection reveals that the materials disposed in this area were largely concrete runway debris.

#### **8.2.6 PSC No. 6 - Fuel Farm (Steam Pit)**

A fuel oil leak (No. 6 fuel oil) occurred in a steam pit pipe at a fuel pipeline connection. An unknown quantity of fuel oil leaked into the underground concrete line steam pit which contained some water. Reportedly, the fuel oil floated on the surface of the water and was contained within the concrete pit. Subsequently, the Navy pumped the fuel oil out of the pit.

#### **8.2.7 PSC No. 7 - Gas Hill**

This area is west of Catapult Road. Reportedly, explosions involving underground tanks occurred in this area in 1978 and 1979. In 1978, lightning caused an explosion and fire in an underground tank. The residual fuel, not consumed by fire, was pumped into tank trucks and transported offsite for disposal as spent oil. It is known that leaks exist from some existing tanks and their associated piping.

#### **8.2.8 PSC No. 8 - Vacant Lot, Fuel Farm Area**

This area, approximately 200 ft by 100 ft is adjacent to the east side of Catapult Road. The Navy used the area for parking approximately five fighter planes. Inspection of the PSC reveals four piles of material, possibly abrasive blast grit, and two disintegrated plastic bags of fine granular materials.

#### **8.2.9 PSC No. 9 - Old Disposal Area (East of Fuel Farm)**

This PSC is approximately 200 ft wide by 400 ft long and east of Catapult Road along the shoreline of the St. Johns River. This PSC contained construction debris, and a few 55-gallons drums. The Navy disposed of this material for approximately one year from 1977 to 1978.

#### **8.2.10 PSC No. 10 - 10-Tank 199 K**

The Navy stored hot stripped, MIL-R-81835 or Turco 3823 in an underground steel tank (capacity 25,000 gallons) at Tank No. 119 K near Building 119. A Navy contractor disposed of the contents of the tank offsite and the tank was removed in 1983.

#### **8.2.11 PSC No. 11 - Hangar Building 101**

The floor of the main hangar section of Building 101 is constructed of 6-inch-thick reinforced concrete. Reportedly, unauthorized disposal of spent solvents (approximately 2,000 gallons) and other materials into abandoned hydraulic lift shafts occurred for many years. These shafts were concrete pits constructed in the floor of the hangar and covered with steel grates. Infiltration of spent solvents and other flammable liquids from deteriorated industrial sewer lines or disposal may also be responsible for the presence of flammable materials under the hangar floor. Information about specific waste materials is not available; however, chemicals used in Building 101, such as trichloroethene (TCE) and oils, might potentially reach this area. In addition, a spill of more than 150 pounds of mercury also occurred in the "old pump shop" in Building 101. Although the Navy removed most of the spilled mercury and sent it to reclaiming, reportedly, some mercury was not removed and remains at the PSC.

#### **8.2.12 PSC No. 12 - Old Test Cell Building**

There were interconnections of the storm and sanitary sewers with the building roof drains in the vicinity of the old test cell area and Building 101 K. In addition, numerous spills of chemicals reportedly occurred at this PSC. In 1989, all of the cross connections were removed.

#### **8.2.13 PSC No. 13 - Radium Paint Disposal Pit**

The Navy used the area north of former Building 167 for the disposal of radioactive radium paint waste from aircraft instrument dial painting operations which took place at NADEP during and shortly after World War II and continuing through the late 1950s. The Navy disposed of these wastes into a burial pit approximately 40 ft by 50 ft and less than a foot deep. The burial pit contained the paint wastes mixed with soil. This PSC was excavated in the late 1950s. At the time of excavation, radioactivity readings at the surface taken with a radiation survey meter were in the range of 3 to 5 millirems per hour (mR/h) above background. The Navy reportedly moved the contaminated soil to the Radioactive Waste Fill Area, PSC No. 18.

#### **8.2.14 PSC No. 14 - Battery Shop**

The battery shop is in Building 125. The shop contains a seepage pit where the Navy disposed of approximately 100 gallons of waste acid from lead-acid batteries from 1959 to 1982.

#### **8.2.15 PSC No. 15 - Solvent and Paint Sludge Disposal Area**

This area is approximately 100 ft by 100 ft and is south of the paint shop (Building 868). The Navy used the area for disposal of solvents and paint sludges as recently as 1978. Materials Engineering Laboratory tested soil at the PSC and test findings reported the presence of "solvents of all types."

#### **8.2.16 PSC No. 16 - Storm Sewer Discharge - Black Point**

A storm sewer is along Buildings 101, 50, 795, and discharges at Black Point. Over the years, various chemical wastes drained into the storm sewer system through cross connections within the sanitary sewer system. These cross connections no longer exist. It is difficult to estimate the volume of material disposed in this way. The PSC is the outfall or discharge point.

#### **8.2.17 PSC No. 17 - Glass Bead Disposal Area**

This area is in Mulberry Grove. The Navy used the area for the disposal of spent glass beads used in the abrasive blasting operations conducted at NADEP. Disposal of the spent glass beads in this off-shore area began in 1965 and stopped in January 1981. There is visible evidence of a "glass bead bar" that has been created as a result of off-shore dumping.

#### **8.2.18 PSC No. 18 - Radioactive Waste Disposal Area**

The Navy placed radioactive radium paint wastes from aircraft instrument dial stripping operations at NADEP during and after World War II in a burial site (PSC No. 13) until the late

1950s. Reportedly, when this operation ceased, the PSC was excavated. The Navy disposed of this contaminated soil, approximately 1500 cubic ft, at PSC No. 18 near the shoreline in the vicinity of Building 48. This area was originally at water level, but was built up to 3 to 5 ft by the fill material. When excavated, radiation measurements of radiation of the soil (using a radiation survey meter) were reportedly 3 to 5 mR/h. At the time of the site visit, surface measurements of radiation using a survey meter (NUCOR CRM 595 probe) were not significantly above background readings (0.15 mR/h).

#### **8.2.19 PSC No. 19 - Old Gas Station**

The old gas station was at Building 48. Formerly, the PSC contained two buried gasoline storage tanks that were in close proximity to a potable water well. The tanks leaked gasoline and were later abandoned.

#### **8.2.20 PSC No. 20 - Solid Waste Incinerator**

The solid waste incinerator was in Building 952. The ash and solid residues resulting from incineration were taken to the Clay County Landfill. There is no evidence of hazardous wastes being either spilled or disposed at this PSC.

#### **8.2.21 PSC No. 21 - Gold Course (Casa Linda Lake)**

The pesticide Dansit<sup>™</sup> was occasionally applied to the golf course greens to control mole crickets. On April 30, 1979, the Navy applied this pesticide to the greens. On May 6, 1979, a fish kill resulted following several days of heavy rain. The fish kill in Casa Linda Lake later was attributed to runoff of pesticides into the lake. This was an isolated incident.

#### **8.2.22 PSC No. 22 - "Fort Dix"**

Reportedly, the Navy used the area known as Fort Dix as a small arms ammunition disposal area for target or skeet ranges. There was no visible evidence of disposal during the site inspection.

#### **8.2.23 PSC No. 23 - Old Skeet Range**

This area appears to be an old sand pit. It is approximately 500 ft long by 100 ft wide and is adjacent to the golf course. Cinder piles and disturbed ground, a few empty drums and engine containers that were pushed over an embankment, and two two-inch white PVC standpipes are visible at the PSC.

#### **8.2.24 PSC No. 24 - Scrap Metal Disposal Area**

The scrap metal disposal area was beneath the Housing Institute which the Navy constructed as a training center for housing management at this PSC. There was scrap metal piled in the area along with assorted junk truck parts and empty drums. It is assumed that scrap metal was disposed offsite.

#### **8.2.25 PSC No. 25 - Former Building No. 2038 (Naval Hospital, Former Radioactive Waste Storage Area)**

The Navy used this area, adjacent to Building 2038, for the storage of hospital wastes containing radioactive iodine ( $I_{131}$ ) and other radioisotopes. The site was cleaned by a contractor, surveyed, and determined to be free of radiation. Building 2038 was subsequently demolished.

#### **8.2.26 PSC No. 26 - Old Main Registered Disposal Area**

The Navy used this area for the disposal of a variety of wastes, including spent solvents and spent oils. Before 1940, the U.S. Army controlled and utilized the PSC for disposal of debris. From 1940 to 1968, the Navy operated the PSC as a disposal area for solid waste, demolition and construction debris, and spent solvents and oil. The Navy burned these wastes at the edge of trenches and pits, with the remains bulldozed into the trenches and pits and covered. Air pollution control requirements halted burning, and the solid wastes were then hauled offsite by a contractor. However, the Navy continued to dump spent solvents and oil in the pits. The Navy officially closed the PSC on January 15, 1979.

The Navy also used a portion of the disposal area for the disposal of low-level radioactive wastes during World War II and until 1955. Instruments with radium dials and other low-level radioactive wastes were probably disposed at PSC No. 26. Although the Navy did not consider the radiation levels measured at the time of disposal significant, the area was decontaminated. A contractor for the Navy excavated and placed dirt in approximately 500 steel drums for disposal at an approved facility in Barnwell, South Carolina.

#### **8.2.27 PSC No. 27 - Former PCB Storage Area**

The Navy used this area, approximately 100 ft by 100 ft, for the outdoor storage of transformers containing PCBs. The transformers were vandalized in 1978 resulting in the spillage of transformer fluids on the ground. The Navy removed the transformers and the PCB-contaminated soil was removed and disposed offsite.

#### **8.2.28 PSC No. 28 - Former Fire Fighting Training Area**

This site was a former fire fighting training area. The fire pit was in the vicinity of the patrol road turnaround. Approximately 5 to 10 gallons/day of spent oil was placed in the pit and burned from 1946 to 1952.

#### **8.2.29 PSC No. 29 - Organic Disposal Area**

The Navy used the area for the disposal of organic debris (wood, grass clippings, etc.). Reportedly the Navy disposed of materials other than organic debris in this area. Inspection of the PSC shows evidence of approximately one dozen crushed drums, construction debris, discolored soil, and scrap metal. Historically, the disposal area may have been used as a borrow pit. Quantities, types of wastes, and dates of disposal are not known.

#### **8.2.30 PSC No. 30 - 30-Old Drum Lot**

The Navy used this site for the storage of drums containing raw products and stored the drums on Marsden Matting. The Navy stored approximately 10,000 drums at this PSC from 1955 to 1967. Although there is no visible evidence of environmental impairment at this PSC, it has been reported that on occasion drums containing hazardous materials have corroded and leaked their contents onto the ground.

#### **8.2.31 PSC No. 31 - Asphalt Mix Area**

This PSC is at the Public Works Materials Lay Down Area. The Navy was reported to have stored leaking drums containing asphalt mix materials in this area. There is no visible evidence of contamination. The area is presently used by the public works department for storage of equipment, materials, and old vehicles.

#### **8.2.32 PSC No. 32 - Former Base Landfill**

The Navy used this old base landfill during the 1960s for disposing of soil, refuse, construction debris, old vehicles, and household refuse (in dumpsters). The PSC covers approximately five acres.

#### **8.2.33 PSC No. 33 - Base Service Station**

The base service station is at Building 429. There was an occurrence of gasoline leakage from this station as recently as June 1982. The total loss of fuel was approximately 2,000 gallons.

#### **8.2.34 PSC No. 34 - Former Transformer Storage Building**

Formerly, the Navy used Building 525 to store transformers. This building and the adjacent building (No. 951) today serve as the base commissary. Building 525 was originally a warehouse. According to interviews with base personnel, the building was demolished and a new commissary was built on this PSC in 1978. Reportedly, hazardous materials originally stored in the building were moved to PSC No. 27.

#### **8.2.35 PSC No. 35 - Former Temporary PCB Storage Area**

The Navy used Building 480 for the temporary storage of PCB oil. In July 1981, a Navy contractor removed asbestos pipe insulation from a building and deposited the asbestos in Building 480. A Navy contractor removed the bulk material and decontaminated the building after dust samples indicated that the area was contaminated.

#### **8.2.36 PSC No. 36 - Dewey Park**

This area is west of Gate 3 south of Dewey Park Water Plant. The PSC contains construction debris and materials from fire damaged buildings. The PSC occupies an area approximately two acres in size in a clearing in a wooded area. Access to this area is through Dewey Park; however, the PSC spans the border of the site property.

#### **8.2.37 PSC No. 37 - Former Power Barge Dock Area**

Reportedly an explosion of a transformer had occurred on the shore in the vicinity of the power barge dock when the barge was in operation. Investigation of this issued revealed that all transformers were on the barge and that no explosions occurred.

#### **8.2.38 PSC No. 38 - Torpedo Rework Facility**

PSC No. 38 is within the restricted magazine area of the site. Interviews with Base and Ordnance Environmental Support Office personnel revealed that the Navy generates approximately one 55-gallon drum of solid waste materials (i.e., rags and gloves containing Otto Fuel) each day which is disposed offsite. In addition, two sumps exist behind Building 327 which may have received waste.

#### **8.2.39 PSC No. 39 - Possible Transformer Burial Area**

A retired Public Works Department employee reported that the Navy buried hundreds of old and new transformers (which may have contained PCB oils), east of warehouse Building No. 164 during 1943 through 1945. The retired employee believed that a 10 ft wide by 5 ft deep ditch, between the warehouse building and the railroad tracks to the east, is the probable burial spot of the transformers.

#### **8.2.40 PSC No. 40 - Former East IWTP Discharge Area**

Prior to 1972, a wastewater treatment plant was near the main runway. Primary wastewater treatment included settling for removal of solids and skimming for removal of oils and solvents. Secondary treatment was provided by trickling filter units. Effluent from the plant was discharged to the St. Johns River. Reportedly, the discharge to the river resulted in a buildup of sediments in the cove east of runway 27. The Navy removed the east side plant from service in 1972 and the waste stream was diverted to the west side plant.

#### **8.2.41 PSC No. 41 - Domestic Waste Sludge Drying Beds**

The EPA classified the domestic sludge drying beds as surface impoundments operated to treat RCRA hazard wastes F006 and F019. An average of 90 gallons per day of sludge was dewatered in domestic sludge drying beds during the operation. These sludges may potentially contain heavy metals.

#### **8.2.42 PSC No. 42 - Polishing Pond for the WWTP Effluent**

The EPA classified the Polishing Point as a surface impoundment operated to treat RCRA hazardous wastes F006 and F019. The Polishing Pond received 2.3 million gallons per day of treated effluent from the wastewater treatment plant for final clarification before chlorination and discharge to the St. Johns River.

#### **8.2.43 PSC No. 43 - Industrial Waste Sludge Drying Beds**

The industrial waste drying beds were constructed in 1980 and operated to dewater metal hydroxide sludges from electroplating operations (RCRA F001-F006, F019). Between 1980 and 1988, approximately 8,250 gallons of dried sludges were excavated and removed from the surface impoundment annually. The sludges may have contained heavy metals and organic solvents. In 1988, the industrial waste sludge drying beds were taken out of service and all sludge was removed. The underlying drainage sand and filter underdrains were left in place.

#### **8.2.44 PSC No. 44 - Drainage Ditch, West of Ajax Street, from Yorktown Avenue to Mulberry Cove**

PSC No. 44 is an open-channel drain situated west of and running approximately parallel to Ajax Street between Buildings 852 and 966, that discharges to the St. Johns River. Sediments in the channel are potentially contaminated with metals and organics. The source of the contamination was the overflow of the hazardous waste storage tank system (Tanks A and B) in the keyway of Hangar 1000. Tanks A and B received waste solvents and other substances through drain lines from the waste sinks in Hangar 1000. Due to a cross connection between the 4-inch drainline from Tank A and a nearby 20-inch storm drain line, discharge of hazardous waste into the storm sewer that drains into PSC No. 44 occurred during periods of heavy precipitation. The last known discharge of waste into the tanks occurred in November 1987. Since then, the drain lines to the tanks have been capped and the tanks have not been used. The tanks are regularly inspected and the accumulated rain water that surges into Tank via the storm drain line is pumped out as necessary.

#### **8.2.45 PSC No. 45 - Building 200 Wash Rack Waste Disposal Pit**

PSC No. 45 is an open-bottom pit approximately 4 ft in diameter, with concrete walls about 5 ft deep. The pit was recently discovered during repair work to correct plumbing problems at Building 200. For an unknown period of time, the overflow from oil/water separator in Building 200 flowed into the pit. The oil/water separator served a wash rack where ground support equipment cleaning and paint stripping operations took place. The drain to the pit has since been plugged. Accumulated waste to a depth of approximately 6 to 8 ft below land surface (bls) was pumped out of the bottom of the pit into 55-gallon drums and disposed of as hazardous waste. The removal of the concrete walls of the pit was scheduled to occur in October 1991.

### **9.0 NS MAYPORT**

#### **9.1 BASE LOCATION**

NS Mayport is about 15 miles east-northeast of downtown Jacksonville, Florida (Figure 1-8). NS Mayport was established in 1942 on approximately 700 acres of land.

The turning basin, where ships are docked and serviced, is in the northern part of the station.



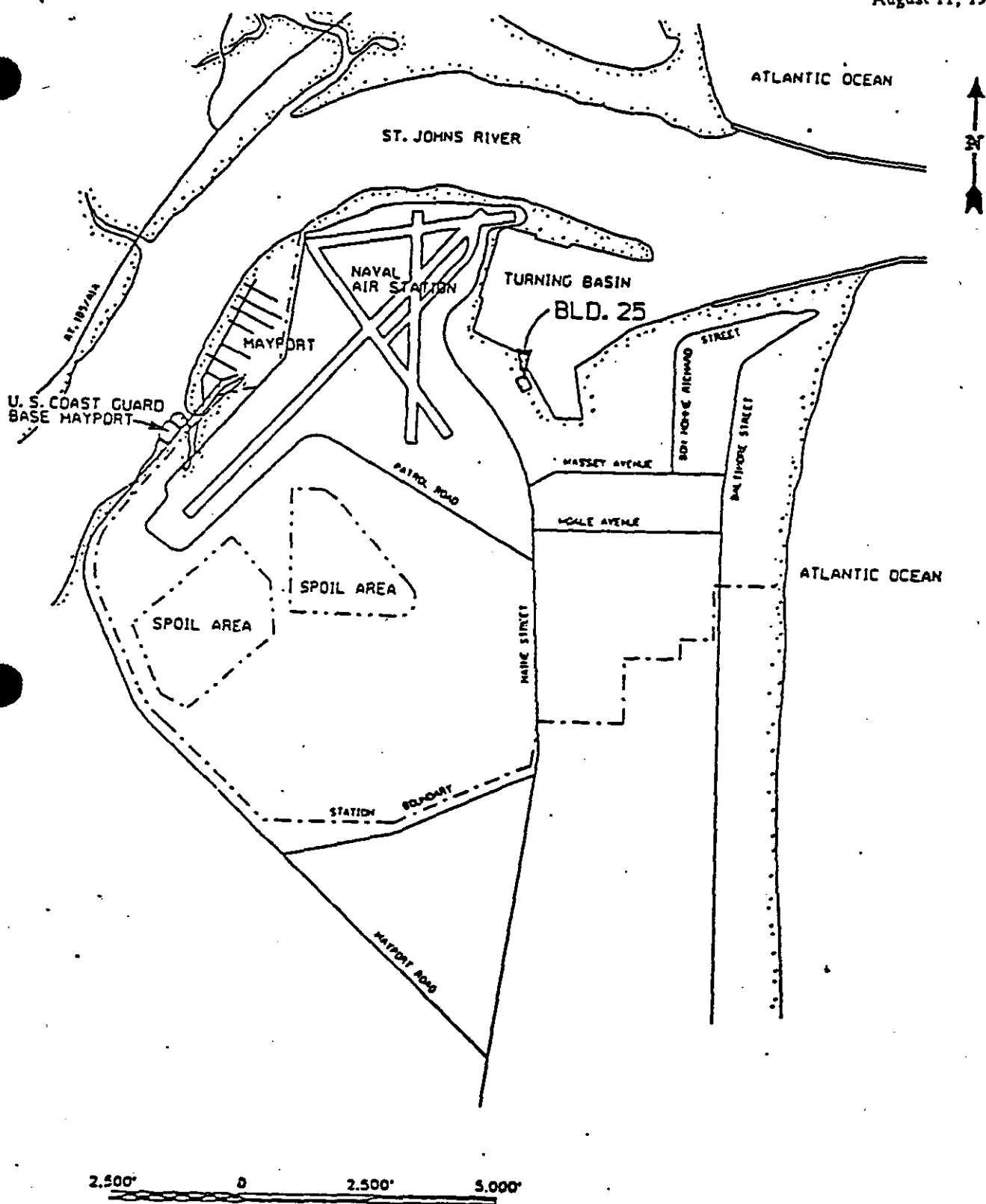


Figure 1-8 Site Location Map  
 Mayport

## 9.2 BASE HISTORY

NS Mayport is primarily involved in intermediate level maintenance of equipment, ships, aircraft, and other support units assigned to the Second Fleet, which is stationed at the facility.

### 9.2.1 Building 25 - Service and Fueling Facility

Building 25 is a service and fueling facility for Navy vehicles and is on the southeast corner of Maine Street and Mason Avenue. The ship basin is approximately 3000 feet to the east.

Field observations during the contamination assessment indicated petroleum contamination at the site is due to a combination of past piping leaks, spills resulting from overlapping of the USTs, and spills due to overfilling vehicle tanks at the dispersive island.

The 1,000 gallon underground storage tank (UST) was installed at Building 25 in 1952 for storage of diesel fuel. Two additional USTs, one 2,000-gallon and one 1,000-gallon tank, were installed in 1954 for gasoline storage. In 1974, a 10,000-gallon UST was installed for gasoline storage. At the present time, all four USTs are in use in their intended capacity.

In July 1990, fuel odors were detected in the soil around the 10,000-gallon UST. Hydrocarbon concentrations greater than 1,000 ppms were indicated by Organic Vapor Analyzer (OVA) readings in several shallow borings around the tank.

No leaks were detected during subsequent tank tightness tests performed on all four USTs. However, a small leak was discovered in the fuel delivery line from the 10,000-gallon UST to the fuel dispenser. This leak was repaired, and all tanks are currently in service.

Several fuel spills resulting from overfilling vehicle fuel tanks occurred at the dispersive island. The quantity of spilled fuel is unknown, but apparently spilled fuel would have flowed across the paved surface toward a low grassy area in the southwest corner near monitor well MAY-25-10. In February 1991, a contamination assessment was initiated at the site to determine the nature and extent of petroleum contamination. A series of 35 soil borings were drilled at the site to determine the extent of petroleum contamination in the soil. Boring depths ranged from 4 to 7 feet with the exception of 25-21 which was drilled to a depth of 30 feet. Soil samples were visually inspected and analyzed using an OVA. Carbon filters and a photoionizing detector PID) were used to aid in the identification of methane interferences.

Seven temporary wells were installed in selected soil borings to aid in the determination of groundwater flow direction and gradient. These wells were constructed of 2-inch PVC to depths of 4 to 6 feet. Fifteen permanent monitor wells were installed during the contamination assessment. Groundwater at this site is approximately 2 to 4 feet bls. Although very little groundwater gradient exists at this site, the direction of flow is generally to the southeast. NS Mayport is primarily involved in intermediate level maintenance of equipment, ships, aircraft, and other support units assigned to the Second Fleet, which is stationed at the facility

### 9.2.2 Site Alpha and Delta Piers

In 1985, product loss was discovered in a DFM line. A break in the pipeline was detected at the junction of the Alpha and Delta piers. It was estimated that more than 500 gallons of fuel were released. Personnel from the facility's Public Works department were unable to state exactly which fuel line was involved with the product loss. The amount of product recovered is unknown. In August 1988, 3 1/2 inches of free product were discovered in an electrical utility manhole. The manhole is on Alpha Pier, south of the 1985 DFM pipeline break area. Approximately 1,000 gallons of an oil and water mixture was removed from the manhole.

In January 1990, a DFM pipeline was cut during excavation operations at the west end of Alpha Pier. It was estimated that the amount of released product was less than 1,000 gallons. During repair operations, an unknown quantity of contaminated soils were removed from the site and transported to a permitted incineration facility.

Discovery of old oily waste product in the excavation area indicated a previous product release. As a result, fitness tests were conducted on the oily waste and fuel pipelines. The oily waste mainline is a gravity flow system and does not allow for in-line testing or sampling until it is discharged into a common receiving vessel. Specific identification and location of suspect piping is not possible. As a result, the oily waste mainlines were tested with a dye tracer. The dye test indicated that an oily waste line was leaky. The test also indicated that the storm drain lines were leaky and receiving petroleum product from the lines and/or contaminated soils and groundwater.

In the spring of 1992, a new water line was installed at the Alpha and Delta Piers. At that time, some contaminated soil was removed from the area where the break had occurred. Some of the soil was incinerated at an offsite facility. The remainder of the soil, contained in twenty-four 55-gallon drums, is scheduled to be or has been incinerated at an offsite facility. Subsequent to the installation of the new water line, both Alpha and Delta 1 Piers were repaved with a compacted limerock base and 4 inches of asphaltic concrete.

During periods of rain and at low tide, a sheen is sometimes evident at the discharge point of the storm sewer that empties into the turning basin near the intersection of the Alpha and Delta Piers. Absorbent booms have been placed at the point of discharge of the storm sewer. The storm sewer is between Building 2 and 36. The storm sewer in question is downgradient of the location of the 1985 DFM pipeline break.

## 10.0 NTC ORLANDO

### 10.1 BASE LOCATION

Naval Training Center (NTC) Orlando, Florida covers 2,019 acres in orange County, Florida (Figure 1-9). The Main Base lies entirely within the Orlando city limits, approximately four miles northeast of downtown Orlando. Area "C" is located approximately two miles west of the main base off McGuire Road. The Herndon Annex is located approximately five miles south of the main base and adjacent to Herndon Executive Airport. The McCoy Annex is located in

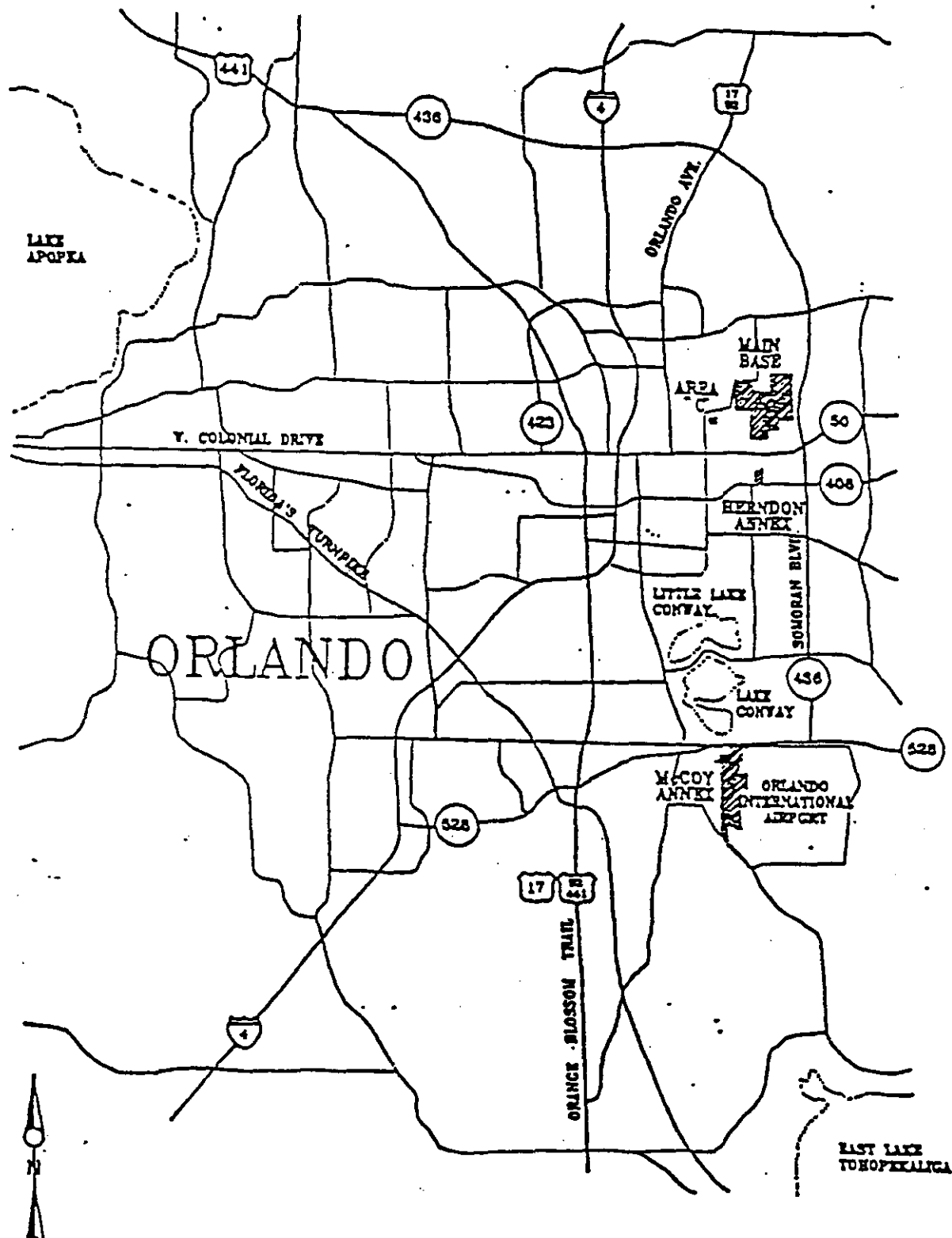


Figure I-9 Site Location Map  
 NTC Orlando

Pinecastle, Florida, 12 miles south of the main base and west of the Orlando International Airport.

## 10.2 BASE HISTORY

The land use history of the NTC, Orlando dates to the construction of the original Orlando Municipal Airport prior to 1940. In August 1940, the municipal airport was taken over by the Army Air Corps. Shortly thereafter, the construction program for Orlando Air base began, culminating in its official opening on December 1, 1940. During the following two years, the Army Air Corps acquired additional property and auxiliary landing fields were built in the surrounding area. The Army Air Corps conducted operations at the Main Base and Area "C" from 1940 to 1947.

In 1947, the Air Force assumed command of the facilities as the Orlando Air Force Base (OAFB). The base was deactivated on October 28, 1949, and remained on standby status until January 1, 1951, when it was reactivated as an Aviation Engineers training site. Other Air Force units arrived and the Military Air Transport Command (MATC, later the Military Airlift Command, MAC) assumed full jurisdiction of the base in 1953.

The Navy began moving its Training Device Center from Port Washington, New York to OAFB on September 15, 1965, and finished the move in June 1967. In 1968, the Air Force ceased operations at OAFB, Area "C" and Herndon Annex. The property was commissioned as the Naval Training Center, Orlando on July 1, 1968.

At the end of World War II, the base was deactivated and the property was returned to the City. The terms of the property transfer included a "reverter for reactivation" clause in case of a national emergency. This clause was exercised in 1952 during the Korean Conflict and the base was reopened as Pinecastle Air Force Base. The base was renamed McCoy Air Force Base in honor of Colonel Michael N. W. McCoy on May 7, 1958. On August 5, 1959, the Capehart Housing project, a large construction program consisting of 668 family quarters for officers and airmen, was begun. The last unit was completed in March 1961. The Air Force retained command of the base until its closure in 1973. At that time, the Navy acquired title to part of the property and changed the name to McCoy Annex.

The NTC complex in Orlando, Florida is comprised of four noncontiguous properties: the Main Base, Area "C", Herndon Annex, and McCoy Annex. The majority of the operational and training facilities within the NTC complex are located at the Main base, a 1,093-acre parcel that includes the Naval Hospital and 254 acres of lakes (Lake Baldwin and Savannah).

### Possible Wastes Located at the Following Sites:

Main Base:	Diesel oil, heating oil, medical waste, paint thinner, perchloroethylene, pesticides, gasoline
Area "C":	Oil, asbestos-containing material, perchloroethylene, PCB's

McCoy Annex: Oil, medical waste, paint, transformers, anti-freeze, low level radioactive waste, gasoline, PCB's

Herndon Annex: Oil, PCB's, Pesticides

### 10.2.1 Area C

Area "C" covers 45.8 acres with 4.6 acres of unusable wetlands associated with Lake Druid. Area "C" is the primary supply center for the complex.

### 10.2.2 McCoy Annex

The history of McCoy Annex dates to 1941 with the construction of the Orlando Municipal Airport No. 2 in Pinecastle, Florida. The New Airport was needed due to the acquisition of the original airport for construction of the Orlando Air Base to the north. Prior to the construction of the new airport, the property was undeveloped swampland. In 1942, the city leased the Pinecastle property to the Army Air Corps, which acquired additional lands and constructed Pinecastle Army Air Field. At the end of World War II, the base was deactivated and the property was returned to the city. The terms of the property transfer included a "Reverter for Reactivation" clause in case of national emergency. This clause was exercised in 1952 during the Korean conflict. The base was renamed as McCoy Air Force Base in 1958. On August 5, 1959, the Capehart Housing project, a large construction program consisting of 668 family quarters for officers and airmen was begun. The last unit was completed in March 1961. The Air Force retained command of the base until its closure in 1973. At that time, the Navy acquired title to part of the property and changed the name to McCoy Annex.

### 10.2.3 Herndon Annex

The Herndon Annex occupies 54 acres and provides research, design, development, testing, evaluation, procurement, fabrication, maintenance and logistic support for Naval training devices and equipment. The McCoy annex occupies 826 acres and serves mainly as a housing and community support activity for the NTC complex.

## 11.0 CSS PANAMA CITY

### 11.1 BASE LOCATION

Coastal Systems Station (CSS) Panama City, Florida is on St. Andrew Bay in Bay County, Florida (Figure 1-10). CSS Panama City is bounded by U.S. Highway 98 to the north, St. Andrew Bay to the east, State Road 392B (Magnolia Beach Road) to the south, and State Road 392 (Thomas Drive) to the west.

### 11.2 BASE HISTORY

CSS Panama City, Florida is one of seven major research test, and evaluation laboratories of the space and Naval warfare systems command. CSS Panama City consists of two operational areas,

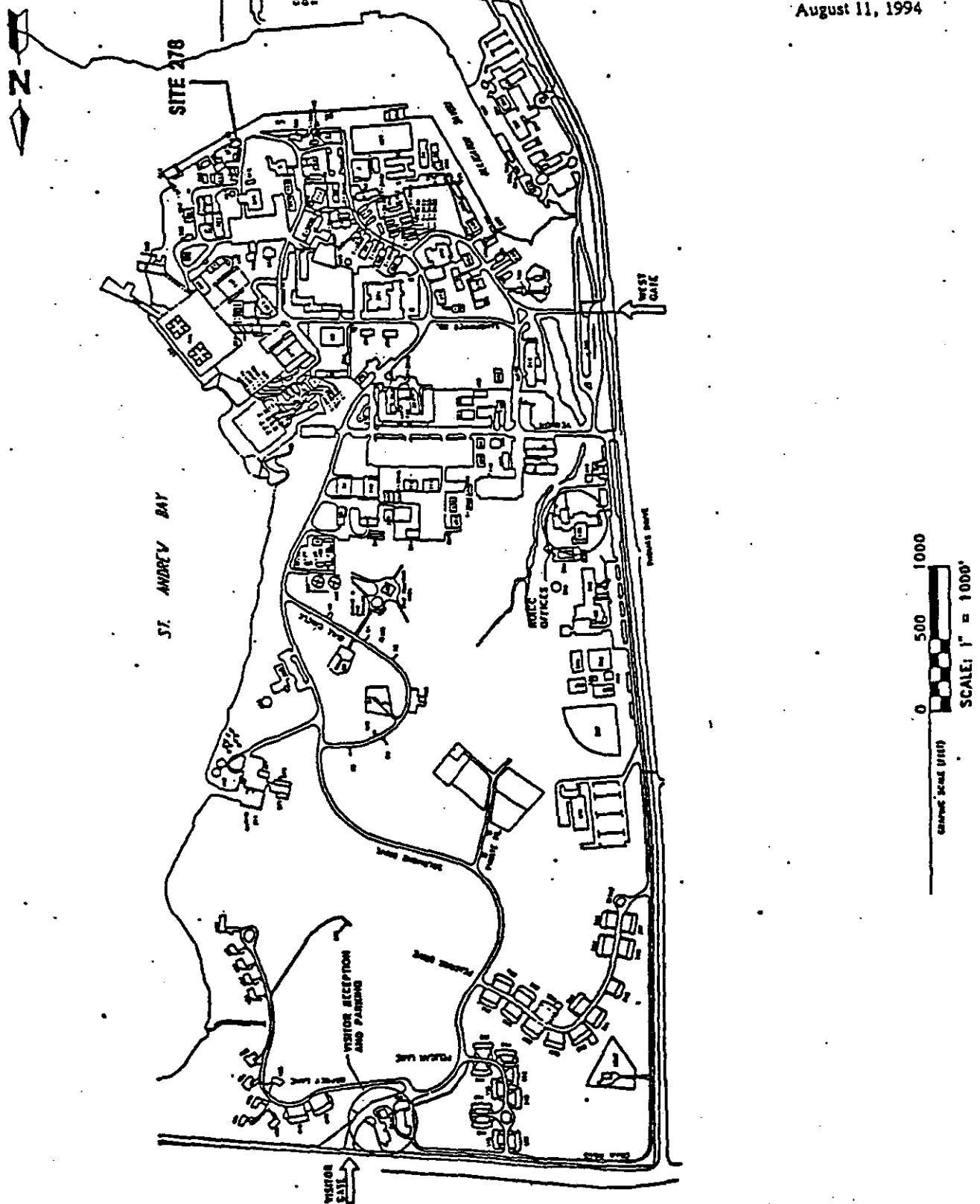


Figure 1-10 Site Location Map  
 CSS Panama City

the laboratory and ordnance areas, that encompass about 660 acres. The laboratory area, situated north of Alligator Bayou (an inlet to St. Andrew Bay), covers about 300 acres and is used primarily for ordnance storage and limited research. CSS Panama City was first established in 1942 as a safe harbor for World War II convoy ships and as a liaison with a nearby ship yard. It later became an amphibious landing craft operations school. Research and development began in 1945 with the establishment of the U. S. Navy mine countermeasures station.

#### **11.2.1 Site 278 - Underground Storage Tanks**

Site 278 is at the east dock alongside Alligator Bayou. Site 278 is the former location of four 7,500-gallon USTs which were installed in 1977 and used for storage of fuel. These tanks were removed in 1989 and replaced with two 15,000-gallon, double-walled steel tanks with a resin coating and interstitial leak detection equipment. These new tanks were also used for diesel fuel storage. After the removal of the 7,500-gallon tanks, a visual inspection of the removal area indicated that stained soil was present under the tank pads. Some of the stained soil was excavated during tank replacement and disposed of. No groundwater samples were collected during tank removal. A closure report for tank removal was not submitted and copies of the manifests for transportation and disposal of the petroleum-contaminated soil was not provided. The east dock has been used for a refueling station for ships.

#### **11.2.2 Site 325 - Underground Storage Tanks**

Site 325 is immediately south of the heliport at CSS Panama City. The consists of three 20,000-gallon fiberglass underground storage tanks (USTs) containing JP-5 jet fuel. The USTs are buried under reinforced concrete. The associated piping for fueling at the adjacent heliport is installed aboveground in the tank area. A concrete driveway surrounds the tank pad area. A small grass-covered part of the area is used for packing equipment and industrial vehicles.

The three 20,000-gallon USTs were installed in 1976 and became operational in 1983. The associated piping is made of steel and coated with corrosion-resistant material. The tanks are gauged daily and inventory records are reconciled monthly. The tanks are equipped with overfill protection and alarms, which sound when a predetermined level of fuel in the tank is exceeded.

As part of the Navy Release Detection Program, monitoring wells were installed around the USTs in 1989. During this installation of the monitoring wells, petroleum odors were detected in the soils. Tank contents were reportedly restricted to JP-5 jet fuel.

#### **11.2.3 AOC 1 - Old Fire Training Area**

AOC 1 is about 140 feet west of Building 100 and approximately 700 feet from St. Andrew Bay. Fire fighting training exercises were conducted at this site from the mid-1950s to late 1970 when the new facility off of Gull Circle was constructed. Firefighting training occurred approximately once a month in an unlined pit of approximately 500 square feet in area. In 1978, the site was paved with concrete and asphalt. Presently it is being used as an open storage area.



## **12.0 NC PENSACOLA**

### **12.1 BASE LOCATION**

The Pensacola Naval Base Complex is located on the western edge of Pensacola Bay, Florida on State Route 295 (Figure 1-11). Naval Air Depot (NADEP) Pensacola occupies approximately 130 acres at NAS Pensacola.

### **12.2 BASE HISTORY**

The mission of NADEP Pensacola is to: maintain and operate facilities for, and perform a complete range of depot-level rework operations on designated weapons systems, accessories, and equipment; manufacture parts and assemblies, as required; provide engineering services in hardware design; furnish technical services on aircraft maintenance and logistic problems; and perform other levels of aircraft maintenance.

In 1987, the Naval Air Rework Facility (NARF) in Pensacola, Florida, was renamed NADEP. NADEP Pensacola, Florida, formerly the operations and repair department of the Naval Air Station (NAS) Pensacola, is now a tenant command located on NAS facilities within the Pensacola Naval Base Complex.

There are a total of 42 PSCs associated with NC Pensacola. Twenty-nine (29) PSCs are covered in this plan.

#### **12.2.1 PSC 1 Sanitary Landfill**

This large Solid Waste Management Unit (SWMU) received both sanitary and industrial waste over a 20 year period. Over the years, this site has receive various wastes. These waste include solvents, PCB's, plating solutions, pesticides, oils, paints, mercury, medical waste, and pressurized cylinders. Reportedly, asbestos is also buried here.

#### **12.2.2 PSC 2 Waterfront Landfill**

Documented quantities of industrial and hazardous waste discharged to Pensacola Bay by storm sewers over a 35 year period. Examples of these hazardous wastes are solvents, cyanide and heavy metals. Sediments samples taken show only trace amounts of metals when analyzed by EP Toxicity. Fish kills were not uncommon in this area during 1940s, 1950s, and 1960s. Periodic dredging has occurred in this area to accommodate the aircraft carrier USS Lexington. Dredging has been done to widen and deepen the channel for current aircraft carrier berthing.

#### **12.2.3 PSC 3 Crash Crew Training Area**

This area is near Sherman Airfield. Personnel have been trained to fight aviation fires here since 1955. Ignitable fuels are poured into shallow, unlined depressions and ignited. Fires were extinguished with foam agents. Eighteen (18) soil borings were taken to locate free products at this site. Six (6) monitoring wells were installed to monitor for volatile organic compounds

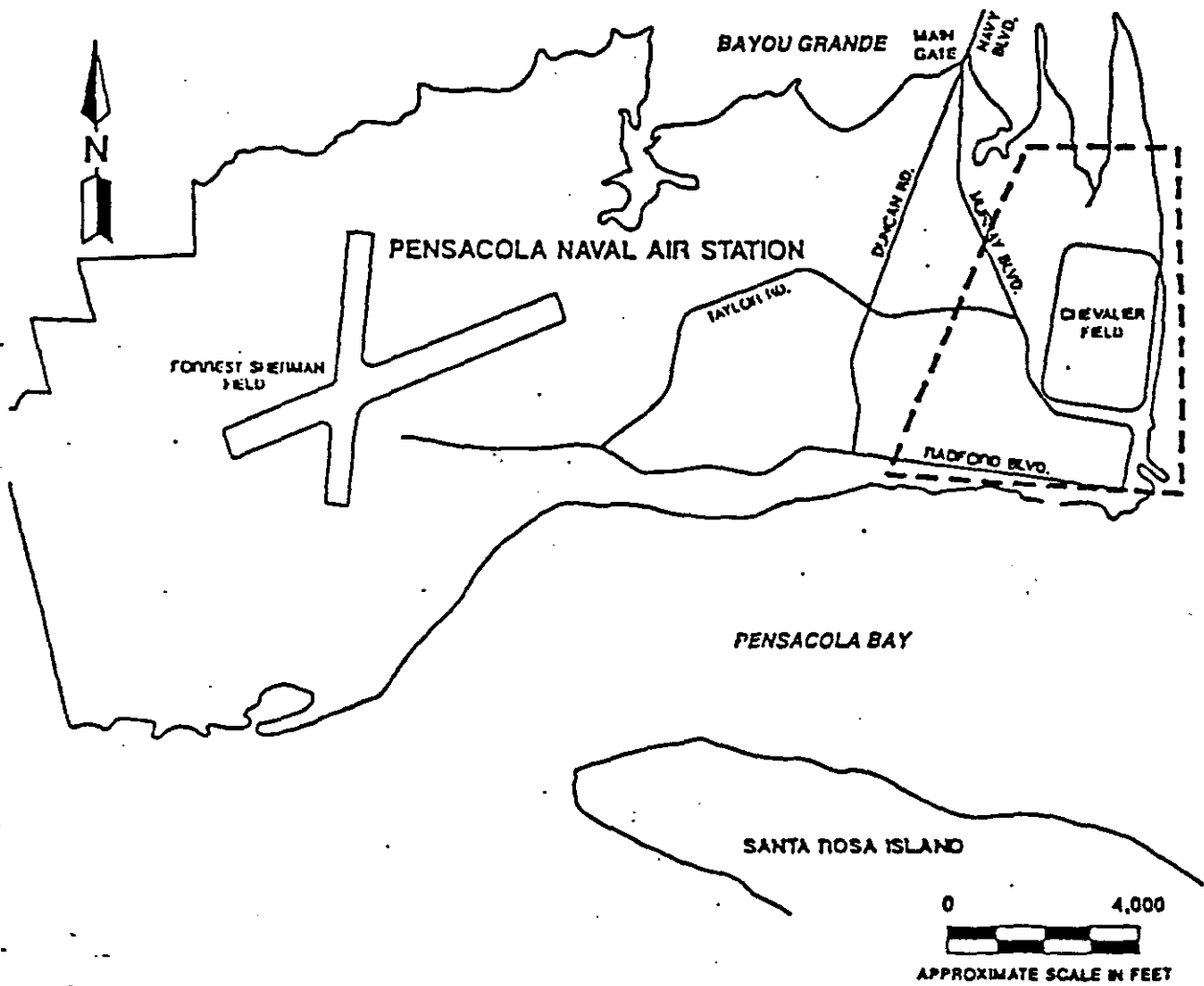


Figure 1-11 Site Location Map  
Pensacola, Florida

(VOCs). No free product was found although halogenated VOCs were detected in three (3) of the monitoring wells.

#### 12.2.4 PSC 9 Navy Yard Disposal Area

PSC 9 was used for the disposal of trash and refuse during the period between 1917 and the early 1930s. It is reported that the PSC is shown on several old maps as the Navy Yard Dump of the Warrington Village Dump. In the late 1960s, while trenching for the Industrial Wastewater Treatment Plant (IWTP) system, part of PSC 9 was excavated. Glass, scrap metal, and debris were unearthed. No unusual odor was reported associated with the PSC. During the VS of this PSC, monitoring wells were installed at the southwest corner of Chevalier Field to determine shallow groundwater flow and groundwater samples taken to further delineate the contamination problem in the general are of Screening PSC 34, Screening PSC 10, and PSC 29. Groundwater samples were analyzed for VOCs; however, no VOCs were detected in any samples obtained.

#### 12.2.5 PSC 11 North Chevalier Disposal

This site received industrial waste and oils, including hazardous waste. Eleven (11) shallow monitoring wells have been installed, three (3) of which have been destroyed. One (1) deep well is also in place. Analytical data from the wells indicate both shallow and deep groundwater contamination with heavy metals and VOCs. Sediment samples showed high concentration of heavy metals. Borings to define the lateral and vertical extent of the landfill indicate construction debris east of the creek. The total lateral extent of the site is unknown. Old topographic surveys indicate the fill encompasses several hundred thousand square feet of the original tidal creek area.

#### 12.2.6 PSC 13 Magazine Point Rubble Disposal

This site is within the same area as PSC 32 and 33, and was found after the construction in 1971 and upgrading of the existing WWTP to provide tertiary treatment of industrial wastes and secondary treatment of the domestic wastes by NAS Pensacola. This PSC contains concrete and rubble. Metals were also disposed at this PSC.

#### 12.2.7 PSC 15 Pesticide Rinsate Disposal Area

PSC 15, is located at the golf course maintenance area. It was used for over sixteen (16) years as a disposal area for rinse water from cleaning pesticide mixing and spray equipment. It includes a septic tank and drain field system. The quantity disposed of in this area is unknown. Analysis of soil samples show the presence of organic pesticides and EP Toxic concentrations of arsenic in the soil. Two (2) shallow monitoring wells were installed. Analysis of groundwater show pesticides arsenic present.

#### 12.2.8 PSC 17 Transformer Storage Yard

Transformers containing PCBs as well as PCB-free transformers were stored on this paved area. A black oily residue on the pavement was found to contain high levels of PCBs as well as other chlorinated hydrocarbons. Three (3) soil borings drilled through the pavement found significant

concentrations of PCBs near the catch basin. Leakage through joints in the pavement is the suspected cause of contamination. PCB concentrations were below toxicity standard.

No sampling of soil outside of the paved area has been done. In addition, no samples were taken for sediments or soils within or under joints, cracks in the catch basin, or the storm sewer.

#### **12.2.9 PSC 18 PCB Spill**

In 1966 a transformer at Substation A reportedly failed, spilling approximately 50 gallons of transformer oil containing an unknown concentration of PCBs on the small gravel-covered area along the northeast side of substation A. It is assumed no clean-up effort was conducted. During field investigations, analysis of a field sample indicated Aroclor 1260 was present at a concentration of 4 ppm.

#### **12.2.10 PSC 24 DDT Mixing Area**

From the early 1950s until the early 1960s, this PSC was used as a location for mixing DDT with diesel fuel for mosquitos control. Spill occurred within the mixing area when DDT was transferred from drums to spray tanks. The unintentional spillage of DDT concentrate may have contaminated the soil and groundwater.

#### **12.2.11 PSC 25 Radium Spill Area**

PSC 25 is located on the eastern portion of NAS Pensacola just east of Murray Road and north of Farrar Road on the east side of Building 780. A small spill of low-level radioactive waste containing radium at this site occurred in 1978. The spill occurred on pavement and was reportedly properly cleaned up. The spill occurred because drums of waste were being stored in the weather and allowed to corrode and leak. Building 780 was the location of radium removal operations for radium dials and other equipment. The equipment was decontaminated here before being repainted in the radium dial shop (former building 708).

#### **12.2.12 PSC 26 Supply Department Outside Storage Area**

PSC 26 is a 90 square foot outside area, south of building 684, used to store containers of industrial materials. Containers were stored on steel mats; however, leakage is reported to have occurred. Contaminants present are industrial waste and oils.

#### **12.2.13 PSC 27 Radium Shop Sewer**

From 1940s to 1976, Building 709 was used to rework instrument dials painted with radium contaminating paint. Spent cleaning solutions and luminous paint were routinely poured into the sanitary sewer system. In 1976, the building was dismantled and the drain pipe found to have a reading of 1.2 mR/hr. The drain pipe was removed to a depth of 18 inches. The remaining lateral underground portion of the pipe was capped and covered with concrete.

#### 12.2.14 PSC 29 Soil South of Building 3460

In 1981, workers excavating soil beneath the concrete apron south of Building 3460 received skin burns from a "black slimy liquid" in the soil. Types of chemicals involved and extent of contamination are unknown. A leak in the nearby industrial sewer line from the NAVDEP facility is the expected source.

#### 12.2.15 PSC 30 Buildings 648 (Previously PSC 31), 649 and 755 and Industrial Waste Sewerline

Over a fifteen (15) year period north of Building 648, waste paint, thinner, and paint sludges were poured onto the ground. The only monitoring well near the site indicated low concentrations of chlorinated hydrocarbons. A second round of samples from this monitoring well detected no chlorinated volatiles. The exact location of the disposal site in relation to the monitoring well is not reported. The plume of contamination may have already passed the monitoring point.

Building 649 housed a tin/cadmium plating shop with fifteen (15) tanks located inside this building, ranging in capacity from 200 to 500 gallons. These tanks, along with a 250 gallon tank of trichlorethylene, were emptied routinely into a ditch leading to a creek discharging into Bayou Grande. Acids, caustics, degreasers, and chromatic solutions were also drained into this ditch. After twenty (20) years, this operation was replaced with a magnesium treatment line. The magnesium treatment line operated for ten (10) years.

Building 755 operated 50 tanks located inside this building over a ten year period as a plating facility for nickel, lead, tin, chromium and miscellaneous metals. These tanks, ranging in capacity from 50 to 200 gallons, were drained periodically into the ditch described above. Sediment samples from four (4) separate locations in the ditch were analyzed for metals and cyanide. Low levels of metal (below EP Toxic) were found.

Waste from various types of operations enter the Industrial Waste Sewer Line without any pretreatment or segregation. Consequently, the waste stream may consist of everything generated or used in the facility, including paint strippers, heavy metals, pesticides, radioactive wastes, fuels, cyanide wastes (prior to 1962), solvents, and waste oils. In 1979, a pump failure at the final industrial waste lift station, located approximately 2,000 feet southwest of the Industrial Waste Treatment Plant, caused a spill of industrial waste into a nearby unnamed creek, which leads into the south arm of Bayou Grande.

#### 12.2.16 PSC 33 Wastewater Treatment Pond

The surface impoundments consisting of the domestic polishing pond, phenol/stabilization pond and industrial surge pond. In 1987, the US EPA RCRA Compliance Branch determined the polishing and stabilization ponds received listed F006 hazardous waste from the surge pond and the ponds were taken out-of-service. During 1988-1989, the ponds underwent RCRA permitted "clean closures" with the sediment removed and disposed of as hazardous waste. The industrial surge pond was taken out-of-service and underwent closure in 1989. The industrial surge pond is suspected of being the prime contributor to the IWTP groundwater contamination.

### **12.2.17 PSC 35 Miscellaneous IWTP SWMUs**

In addition to PSC 32 and 33 units, other units in the IWTP may have received hazardous waste or constituents. Most of these units are above ground tanks. Also included are underground oil/sludge storage tanks and underground piping which are appurtenances to SWMUs. The following units are included as IWTP area SWMUs:

- Industrial Grit Chamber
- Primary Clarifier
- Oil/Water Separator
- Oil Storage Tanks

### **12.2.18 PSC 34 Solvent North of Building 3557**

During May 1984, a leak occurred in a pipeline at the north end of Building 3557. The leak reportedly resulted in the loss of solvent detergent used for cleaning aircraft. The solution contained 1.7 percent chlorinated aromatic hydrocarbons solvent. Contamination of site soils and groundwater may have occurred as the result of the solvent detergent release. Contamination may have penetrated beneath the apron via the expansion joints which separated individual concrete tiles and via runoff of escaped solvent to the unpaved storage tank area. The unpaved drainage ditch in the tank area is suspected to have carried contamination offsite and is presumed to be connected to the paved drainage ditch located west Chevalier Field. It is unknown whether or not site contamination entered into the NAS Pensacola storm sewer system.

### **12.2.19 PSC 38 Building 71 and Industrial Waste Sewer Line**

This building was a storage area for hazardous waste. Soil testing detected hazardous waste constituents, the presence of which is consistent with the use of Buildings 49, 71, and 72 during the period from about 1935 to the late 1970s during aircraft paint stripping and painting operations. Documents identify the use of paint strippers, ketones and trichloroethylene (for parts cleaning) in Buildings 49 and 71. Ten 550 gallon above grade tanks were located in these facilities which were periodically drained through the underground lines from the buildings to Pensacola Bay. A cyanide spill in the area near Buildings 71 and 104 and the presence of cyanide in the adjacent bay waters also are documented in the report.

### **12.2.20 PSC 40 Bayou Grande**

Bayou Grande, an estuarine water body connected to Pensacola Bay, lies adjacent to the northern boundary of NAS Pensacola. During contamination assessment investigations, Total Recoverable Petroleum Hydrocarbons (TRPHs), metals, Polynuclear Aromatic Hydrocarbons (PAHs), and phenols were detected in near shore Bayou Grande sediment samples, and metals were detected in near shore Bayou Grande surface water samples. Sixteen PSCs (1, 3, 9, 10, 11, 12, 15, 16, 23, 29, 30, 32, 33, 34, 35, and 36) are believed to potentially contribute to the concentrations found in Bayou Grande.

#### **12.2.21 PSC 41, NAS Pensacola Wetlands**

An EPA inventory of wetlands identified and enumerated 79 wetlands complexes on NAS Pensacola. Two other wetlands were identified. The majority and largest of the wetlands on NAS Pensacola are located in the western portion of the installation, primarily south and west of Sherman Field. About a third of the 81 wetlands are located east of Sherman Field, where most of the IRP sites are located. These small and remnant wetlands are the only potential receptors on base.

Contamination was detected in all eight wetlands that have been sampled during contamination assessments. Nineteen PSCs (1, 3, 4, 5, 6, 9, 10, 11, 13, 14, 16, 29, 30, 32, 33, 34, 35, 36, and 39) on NAS Pensacola are suspected sources of contamination to these wetlands.

#### **12.2.22 PSC 42 Pensacola Bay**

Swampy areas exist on or near the western portion of NAS Pensacola. Man-made drainage ways and storm drains feed into the short intermittent streams emptying into Pensacola Bay and Bayou Grande. No perennial streams enter or exit NAS Pensacola, but the marshy areas (wetlands) and their small lakes retain water throughout the year. During contamination assessment investigations, metals, TRPH, PAHs, and VOCs were detected in sediment samples collected along the southeastern waterfront of Pensacola Bay. Fourteen PSCs (2, 3, 4, 13, 14, 17, 18, 28, 32, 33, 35, 36, 28, and 39) on NAS Pensacola are suspected sources of contaminants to Pensacola Bay.

#### **12.2.23 Site 2662W Helicopter Defueling**

The UST at Building 2662 was installed in 1983 and was removed during the tank removal program, conducted in 1989 and 1990. A composite soil sample was collected from the UST excavation and analyzed for TRPH. The reported TRPH concentration of 2,100 ppm exceeded the State target level of 50 ppm for soil contaminated by either JP-5 jet fuel or used oil constituents. Excavated soil was reportedly returned to the excavation after UST removal.

### **13.0 F-18 CRASH - CECIL FIELD**

The F-18 Crash Site is being performed as an emergency response action. The site description is contained in TSSH Addendum #4.